

## SEARCH REQUEST FORM

Examiner # (Mandatory): 60299 Requester's Full Name: JACKIE HOWARDArt Unit 1764 Location (Bldg/Room#): CP3 10B-36 Phone (circle 305 306 308) 2514Serial Number: 09/990,857 Results Format Preferred (circle): PAPER DISK E-MAILTitle of Invention Metal Lubricants Containing a Bridge ComplexInventors (please provide full names): Heijiro Ojima; Junio Kawahara;  
Mitsuru TomonoEarliest Priority Date: 12/21/2000

Keywords (include any known synonyms registry numbers, explanation of initialisms):

*lubricating oil comprising compound as  
defined in claim 21. (copy enclosed) or  
claim 28 (copy enclosed)*

## Search Topic:

Please write detailed statement of the search topic, and the concept of the invention. Describe as specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples of relevant citations, authors, etc., if known. You may include a copy of the abstract and the broadcast or most relevant claim(s).

0079.544 E44

BT

## STAFF USE ONLY

Searcher: K. Fuller

Searcher Phone #: \_\_\_\_\_

Searcher Location: \_\_\_\_\_

Date Picked Up: \_\_\_\_\_

Date Completed: 9/21/02Clerical Prep Time: 30Terminal Time: 58

Number of Databases: \_\_\_\_\_

## Type of Search

\_\_\_\_ N.A. Sequence

\_\_\_\_ A.A. Sequence

2 Structure (#)

\_\_\_\_ Bibliographic

\_\_\_\_ Litigation I

\_\_\_\_ Fulltext

\_\_\_\_ Procurement

\_\_\_\_ Other

## Vendors (include cost where applicable)

✓ STN

\_\_\_\_ Questel/Orbit

\_\_\_\_ Lexis/Nexis

\_\_\_\_ WWW/Internet

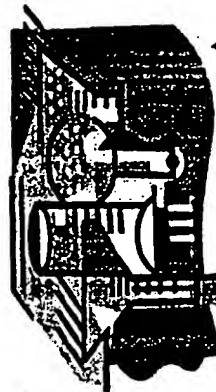
\_\_\_\_ In-house sequence systems (list)

\_\_\_\_ Dialog

\_\_\_\_ Dr. Link

\_\_\_\_ Westlaw

\_\_\_\_ Other (specify)



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## Search Results Feedback Form

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact the searcher whose name is circled below.

Kathleen Fuller 308-4290 Eric Linnell 308-4143 John Calve 308-4139  
All searchers are located in the library in CP3/4 3D62

# EIC1700

## Search Results

### Feedback Form (Optional)



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The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact *the EIC searcher* who conducted the search *or contact*:

Kathleen Fuller, Team Leader, 308-4290, CP3/4 3D62

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#### Voluntary Results Feedback Form

➤ *I am an examiner in Workgroup:*  *Example:*

➤ *Relevant prior art found, search results used as follows:*

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ *Relevant prior art not found:*

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Search results were not useful in determining patentability or understanding the invention.

**Other Comments:**

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Drop off completed forms in CP3/4 - 3D62 .

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Property values tagged with IC are from the ZIC/VINITI data file  
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STRUCTURE FILE UPDATES: 19 SEP 2002 HIGHEST RN 453507-55-6  
DICTIONARY FILE UPDATES: 19 SEP 2002 HIGHEST RN 453507-55-6

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when  
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Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP  
PROPERTIES for more information. See STNote 27, Searching Properties  
in the CAS Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

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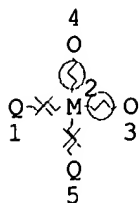
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FILE COVERS 1907 - 21 Sep 2002 VOL 137 ISS 13  
FILE LAST UPDATED: 20 Sep 2002 (20020920/ED)

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the CAS Roles thesaurus (/RL field) in this file.

=> d que  
L3 STR



68, 721 structures from this query

NODE ATTRIBUTES:

NSPEC IS R AT 2  
NSPEC IS R AT 3  
NSPEC IS R AT 4  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

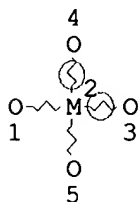
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L5 SCR 1926 AND 1956  
L6 SCR 1964 AND 1991  
L7 SCR 1975  
L8 SCR 1921 AND 1966  
L9 SCR 1935 AND 1983  
L10 SCR 1925 AND 1935  
L11 SCR 1920 AND 1964  
L13 SCR 1845  
L15 68721 SEA FILE=REGISTRY SSS FUL L3 AND ((L5 OR L6 OR L7 OR L8 OR L9 OR L10 OR L11)) NOT L13  
L18 STR

M = Zn, Mn, Fe, Mo, Sm  
Sb, Cu



Subset searches - more exact structures

NODE ATTRIBUTES:

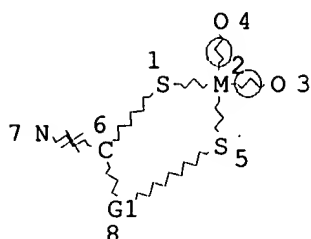
NSPEC IS R AT 2  
NSPEC IS R AT 3  
NSPEC IS R AT 4  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L21 STR



REP G1=(0-1) C  
 NODE ATTRIBUTES:  
 NSPEC IS R AT 2  
 NSPEC IS R AT 3  
 NSPEC IS R AT 4  
 NSPEC IS RC AT 7  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

L24 10240 SEA FILE=REGISTRY SUB=L15 SSS FUL (L21 OR L18)  
 L25 6446 SEA FILE=HCAPLUS ABB=ON L24  
 L26 13 SEA FILE=HCAPLUS ABB=ON L25 AND LUBRICANT?  
 L28 15 SEA FILE=HCAPLUS ABB=ON L25 AND LUBRICAT?  
 L29 22 SEA FILE=HCAPLUS ABB=ON L26 OR L28

=> d 129 all 1-22 hitstr

L29 ANSWER 1 OF 22 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2002:503808 HCAPLUS  
 DN 137:81261  
 TI **Lubricants** containing bridged complex for use in  
 plastic-processing of metallic materials  
 IN Oshima, Heijiro; Kawahara, Fumio; Tomono, Mitsuru  
 PA Mec International K. K., Japan  
 SO Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C10M107-54  
 ICS C10M173-02; C10N010-02; C10N010-04; C10N010-08; C10N010-10;  
 C10N010-12; C10N010-14; C10N010-16; C10N040-24  
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)  
 Section cross-reference(s): 55, 56  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002188090	A2	20020705	JP 2000-389433	20001221
	US 2002123435	A1	20020905	US 2001-990857	20011115
PRAI	JP 2000-389433	A	20001221		

AB The title **lubricants** comprise (1) .gtoreq.2 central metal atoms,  
 (2) .gtoreq.1 multidentate ligand(s) for bridging the central metal atoms,  
 and (3) .gtoreq.1 metal atom(s) in the multidentate ligand(s) where these

*10,240 structures  
from  
subset search*

*22 CA references with  
utility*

*applicants*

metal atoms with multiple coordination ability do not partly bond to any central metal(s) directly. The central metal is selected from zinc, manganese, iron, molybdenum, tin, antimony, and copper, and the multidentate ligands are selected from oxygen-contg. inorg. acid, org. acid, and amine compds. or their derivs. The **lubricants** are used in the plastic-processing of metals.

ST plastic processing metal bridging complex ligand **lubricant**

IT **Lubricants**

(bridging ligand-contg.; **lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

IT Carboxylic acids, uses

RL: NUU (Other use, unclassified); USES (Uses)

(dicarboxylic, chelates with metals; **lubricants** contg.

bridged complex for use in plastic-processing of metallic materials)

IT Ligands

RL: NUU (Other use, unclassified); USES (Uses)

(multidentate; **lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

IT 62-76-0, Sodium oxalate 136-30-1, Sodium dibutyl dithiocarbamate 2492-26-4 7446-20-0, Zinc sulfate heptahydrate 7601-54-9 10039-32-4, Disodium hydrogen phosphate dodecahydrate 20624-25-3

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(**lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

IT **440643-20-9P**

RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)

(**lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

IT 822-16-2, Sodium stearate

RL: MOA (Modifier or additive use); USES (Uses)

(**lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

IT 7439-89-6D, Iron, chelates with metal-contg. multidentate ligand  
7439-96-5D, Manganese, chelates with metal-contg. multidentate ligand  
7439-98-7D, Molybdenum, chelates with metal-contg. multidentate ligand  
7440-31-5D, Tin, chelates with metal-contg. multidentate ligand  
7440-36-0D, Antimony, chelates with metal-contg. multidentate ligand  
7440-50-8D, Copper, chelates with metal-contg. multidentate ligand  
7440-66-6D, Zinc, chelates with metal-contg. multidentate ligand

RL: NUU (Other use, unclassified); USES (Uses)

(**lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

IT 12742-82-4, s12c, processes

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(**lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

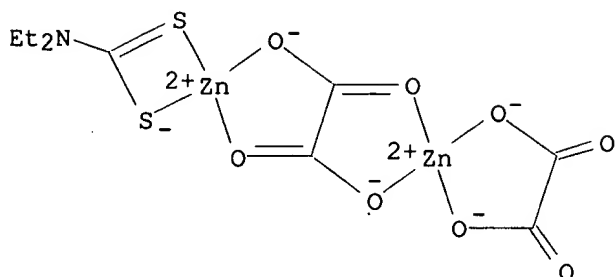
IT **440643-20-9P**

RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)

(**lubricants** contg. bridged complex for use in plastic-processing of metallic materials)

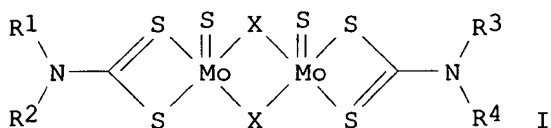
RN 440643-20-9 HCAPLUS

CN Zincate(1-), (diethylcarbamodithioato-.kappa.S,.kappa.S')[.mu.-[ethanedioato(2-)-.kappa.O1,.kappa.O2':.kappa.O1',.kappa.O2]][ethanedioato(2-)-.kappa.O1,.kappa.O2]di-, sodium (9CI) (CA INDEX NAME)

● Na<sup>+</sup>

L29 ANSWER 2 OF 22 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2001:772118 HCAPLUS  
 DN 135:320321  
 TI **Lubricating** oil antioxidant consisting of an oil-soluble molybdenum containing compound and an aromatic amine  
 IN Shaub, Harold  
 PA Exxon Chemical Patents Inc., USA  
 SO U.S., 10 pp., Cont. of U.S. Ser. No. 542,764, abandoned.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 IC ICM C10M135-14  
 NCL 508364000  
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6306802	B1	20011023	US 1997-837735	19970422
PRAI	US 1994-315381	B1	19940930		
	US 1995-542764	B1	19951013		
OS	MARPAT 135:320321				
GI					



AB A **lubricating** oil antioxidant consists of an oil-sol. molybdenum contg. compd. with the general formula (I) wherein R1, R2, R3 and R4 represent C7-C24, preferably C12 or C13, hydrocarbyl radicals, X and X' = S and/or O, and Mo is in the oxidn. state ltoreq. V, and an oil-sol. arom. amine (dialkylated diphenylamine) producing a synergistic antioxidant effect when used as an antioxidant additive. A **lubricating** oil compn. contains 0.01-15 wt.% of the **lubricating** antioxidant. A **lubricating** oil conc. consists of a solvent, being a hydrocarbon oil or synthetic oil, and 5-75 wt.% of the antioxidant. Both, the oil compn. and the conc., contain also a dispersant, a detergent, an antiwear additive, a corrosion inhibitor, a



metal deactivator, a friction modifier, a fuel economy agent, a viscosity index improver, and an antioxidant.

ST **lubricant** oil additive molybdenum arom amine; antioxidant molybdenum complex automobile **lubricant**

IT **Lubricating** oil additives

(antioxidants; **lubricating** oil antioxidant consisting of an oil-sol. molybdenum contg. compd. and an arom. amine)

IT Amines, uses

RL: MOA (Modifier or additive use); USES (Uses)

(arom.; **lubricating** oil antioxidant consisting of an oil-sol. molybdenum contg. compd. and an arom. amine)

IT **Lubricating** oil additives

(**lubricating** oil antioxidant consisting of an oil-sol.

molybdenum contg. compd. and an arom. amine)

IT 122-39-4D, Diphenylamine; dialkylated 594-07-0D, Carbamodithioic acid, dialkyl derivs., complexes with molybdenum thioxo and oxo derivs. 7439-98-7D, Molybdenum, thioxo and oxo derivs., complexes with dialkyldithiocarbamates, uses 36878-20-3, Vanlube DND 58916-57-7, Naugalube 438L 71112-28-2, Pearsall OA 502 100041-12-1, Irganox L-57 111019-18-2, Vanlube SL 121116-74-3 133137-18-5, Vanlube 848 151354-49-3, Naugalube 680 166516-25-2, Molyvan 822 **368449-24-5**

RL: MOA (Modifier or additive use); USES (Uses)

(**lubricating** oil antioxidant consisting of an oil-sol.

molybdenum contg. compd. and an arom. amine)

RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Amsterdam; US 3704315 1972
- (2) Anon; GB 984409 1965
- (3) Anon; GB 1440219 1976 HCAPLUS
- (4) Anon; EP 0024146 1981 HCAPLUS
- (5) Anon; EP 0205165 1986 HCAPLUS
- (6) Anon; Angew Chem Int Ed Engl 1978, V17(4), P279
- (7) Anon; Bull Jap Petrol Inst 1971, 13, P243
- (8) Anon; J Am Chem Soc 1980, V102(15), P5102
- (9) Arai; US 5356547 1994 HCAPLUS
- (10) Benoit; US 3401118 1968 HCAPLUS
- (11) Brois; US 4116876 1978 HCAPLUS
- (12) Cohen; US 3595791 1971
- (13) Cohen; US 4110349 1978 HCAPLUS
- (14) de Vries; US 4265773 1981 HCAPLUS
- (15) de Vries; US 4369119 1983 HCAPLUS
- (16) de Vries; US 4370246 1983 HCAPLUS
- (17) de Vries; US 4394279 1983 HCAPLUS
- (18) Dettlof; US 3087436 1963
- (19) Farmer; US 3356702 1967 HCAPLUS
- (20) Hunt; US 3150088 1964
- (21) Hunt; US 3150089 1964 HCAPLUS
- (22) Kramer; US 4285882 1981 HCAPLUS
- (23) Lesuer; US 3087936 1963 HCAPLUS
- (24) Lesuer; US 3172892 1965
- (25) Lesuer; US 3254025 1966 HCAPLUS
- (26) Lesuer; US 3272746 1966 HCAPLUS
- (27) Lesuer; US 3381022 1968 HCAPLUS
- (28) Lonstrup; US 4113639 1978 HCAPLUS
- (29) Meinhardt; US 4234435 1980 HCAPLUS
- (30) Otto; US 3649229 1972 HCAPLUS
- (31) Palmer; US 3912764 1975 HCAPLUS
- (32) Rense; US 3215707 1965 HCAPLUS
- (33) Rense; US 3231587 1966
- (34) Ryer; US 4102798 1978 HCAPLUS

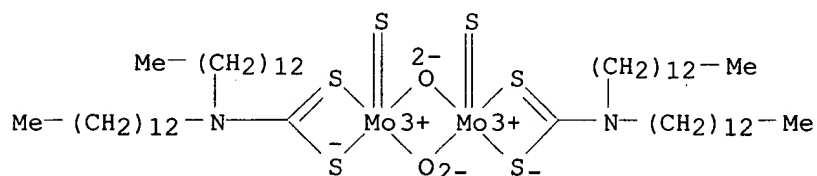
- (35) Sakurai; US 4098705 1978 HCAPLUS  
 (36) Stuart; US 3361673 1968 HCAPLUS  
 (37) Umemura; US 4692256 1987 HCAPLUS  
 (38) van Loon; US 2744069 1956 HCAPLUS  
 (39) Ward; US 4846983 1989 HCAPLUS

IT 368449-24-5

RL: MOA (Modifier or additive use); USES (Uses)  
 (lubricating oil antioxidant consisting of an oil-sol.  
 molybdenum contg. compd. and an arom. amine)

RN 368449-24-5 HCAPLUS

CN Molybdenum, bis(ditridecylcarbamodithioato-.kappa.S,.kappa.S')di-.mu.-  
 oxodithioxodi- (9CI) (CA INDEX NAME)



L29 ANSWER 3 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:554902 HCAPLUS

DN 135:124720

TI Lubricating oil additives

IN Yoshida, Mizuho; Yabe, Atsushi; Naito, Yasushi

PA Japan Energy Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C10M135-02

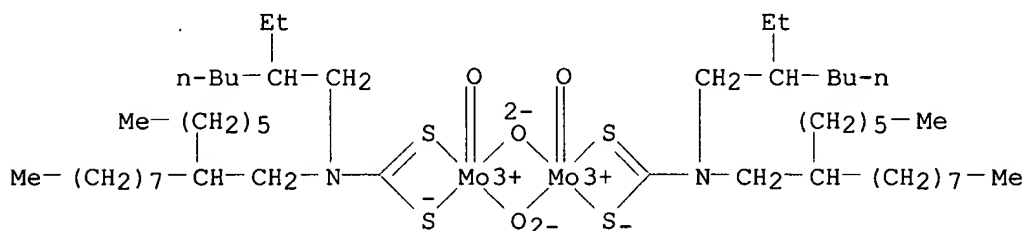
ICS C10M139-00; C10N010-12; C10N030-06; C10N030-12; C10N040-25

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

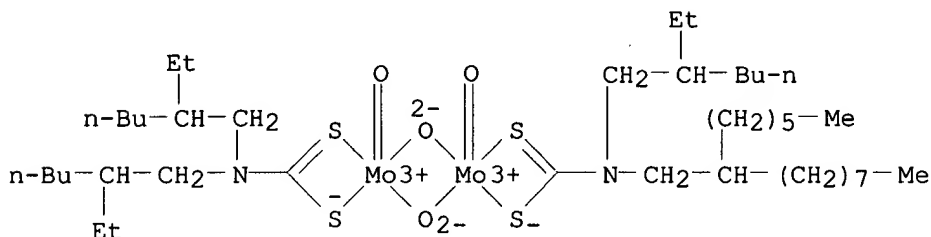
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001207184	A2	20010731	JP 2000-14668	20000124
AB	The title additives are prepd. by reacting Mo compd. with excess alkali metal hydrosulfide or sulfide, a secondary amine, and CS2 to obtain a final product contg. Mo oxysulfide dithiocarbamates. The mol. ratio of S/Mo in the reaction product is preferably .gtoreq.4.5:1. The additives are superior in corrosion resistance to copper plate and wear loss of internal combustion engines.				
ST	lubricating oil antifriction antiwear additive corrosion inhibitor; molybdenum dithiocarbamate lubricating oil antifriction antiwear additive				
IT	Lubricating oil additives (antifriction-antiwear; molybdenum dithiocarbamate derivs., for internal combustion engines)				
IT	Lubricating oil additives (corrosion inhibitors; molybdenum dithiocarbamate derivs., for internal combustion engines)				
IT	75-15-0, Carbon disulfide, reactions 1313-27-5, Molybdenum trioxide, reactions 1313-82-2, Sodium sulfide, reactions 16721-80-5, Sodium hydrosulfide 351029-85-1				
	RL: RCT (Reactant); RACT (Reactant or reagent) (in prepn. of lubricating oil antifriction-antiwear)				

additives, for internal combustion engines)  
 IT 594-07-0D, Dithiocarbamic acid, alkyl derivs., molybdenum salts  
 193229-18-4 193229-19-5  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (lubricating oil antifriction-antiwear additives, for  
 internal combustion engines)  
 IT 193229-18-4 193229-19-5  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (lubricating oil antifriction-antiwear additives, for  
 internal combustion engines)  
 RN 193229-18-4 HCAPLUS  
 CN Molybdenum, bis[(2-ethylhexyl)(2-hexyldecyl)carbamodithioato-  
 .kappa.S,.kappa.S']di-.mu.-oxodioxodi- (9CI) (CA INDEX NAME)



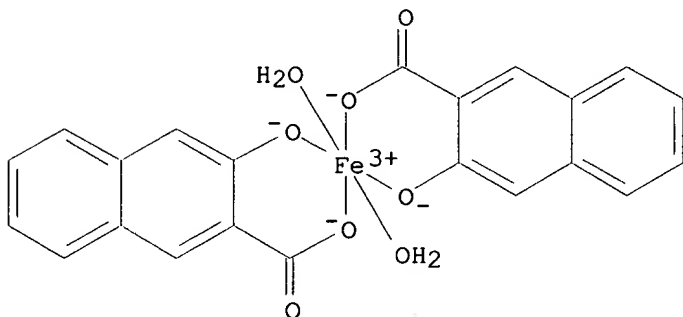
RN 193229-19-5 HCAPLUS  
 CN Molybdenum, [bis(2-ethylhexyl)carbamodithioato-.kappa.S,.kappa.S'][(2-  
 ethylhexyl)(2-hexyldecyl)carbamodithioato-.kappa.S,.kappa.S']di-.mu.-  
 oxodioxodi- (9CI) (CA INDEX NAME)



L29 ANSWER 4 OF 22 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1999:322570 HCAPLUS  
 DN 130:359266  
 TI Image formation method using electrostatographic developer with good  
 antioffset property and fixability  
 IN Suzuki, Shunji; Toyama, Koichi; Shimamura, Masayoshi; Nozawa, Keita;  
 Ogawa, Yoshihiro  
 PA Canon K. K., Japan  
 SO Jpn. Kokai Tokkyo Koho, 19 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G03G009-097  
 ICS G03G009-08; G03G015-08  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 11133670	A2	19990521	JP 1997-296559	19971029
OS	MARPAT 130:359266				
AB	In the image formation method by (1) forming a developer (melt index 0.5-35 g/10 min at 125.degree. and 5 kg-load) layer on a developer support opposite to a support for an electrostatic latent image and (2) developing the image using the developer, the developer support comprises a substrate and a coating obtained by dispersing elec. conducting spherical particles and a N-contg. heterocyclic compd. in a binder polymer. Images are obtained with good antioffset property, fixability, and repeating durability.				
ST	electrostatog developer support heterocyclic compd coating; imidazole coating electrostatog developer toner; elec conducting coating electrostatog developer support; metal azo complex charge controller toner				
IT	Heterocyclic compounds RL: MOA (Modifier or additive use); USES (Uses) (N-contg., coating for developer support; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	Carbon black, uses RL: MOA (Modifier or additive use); USES (Uses) (coating for developer support; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	Phenolic resins, uses RL: MOA (Modifier or additive use); USES (Uses) (copper- and silver-plated, coating for developer support; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	Electrophotographic toners (image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	Alcohols, uses RL: TEM (Technical or engineered material use); USES (Uses) (long-chain, wax, toner; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	Azo compounds RL: MOA (Modifier or additive use); USES (Uses) (metal complexes, charge-controlling agent; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	Waxes RL: TEM (Technical or engineered material use); USES (Uses) (toner; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	9011-14-7, Poly(methyl methacrylate) RL: MOA (Modifier or additive use); USES (Uses) (carbon black-coated, coating for developer support; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	83017-47-4D, alkyl derivs., salts RL: MOA (Modifier or additive use); USES (Uses) (charge-controlling agent; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	260-94-6, Acridine 288-32-4D, Imidazole, derivs. RL: MOA (Modifier or additive use); USES (Uses) (coating for developer support; image formation method using electrostatog. developer with good antioffset property and fixability)				
IT	7782-42-5, Graphite, uses RL: MOA (Modifier or additive use); USES (Uses) (lubricating substance, coating for developer support; image				

- formation method using electrostatog. developer with good antioffset property and fixability)
- IT 1332-37-2, Iron oxide, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(magnetic, toner; image formation method using electrostatog. developer with good antioffset property and fixability)
- IT 7440-22-4, Silver, uses 7440-50-8, Copper, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(plating, coating for developer support; image formation method using electrostatog. developer with good antioffset property and fixability)
- IT 9003-18-3P, Acrylonitrile-butadiene copolymer 26745-88-0P, Hexamethylene glycol-sebacic acid copolymer 26762-10-7P, Hexamethylene glycol-sebacic acid copolymer, sru 30026-62-1P, Butyl acrylate-monobutyl maleate-styrene copolymer  
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(toner binder; image formation method using electrostatog. developer with good antioffset property and fixability)
- IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene  
RL: TEM (Technical or engineered material use); USES (Uses)  
(wax, toner; image formation method using electrostatog. developer with good antioffset property and fixability)
- IT 83017-47-4D, alkyl derivs., salts  
RL: MOA (Modifier or additive use); USES (Uses)  
(charge-controlling agent; image formation method using electrostatog. developer with good antioffset property and fixability)
- RN 83017-47-4 HCAPLUS
- CN Ferrate(1-), diaquabis[3-(hydroxy-.kappa.O)-2-naphthalenecarboxylato(2-)-.kappa.O]- (9CI) (CA INDEX NAME)



- L29 ANSWER 5 OF 22 HCAPLUS COPYRIGHT 2002 ACS
- AN 1998:119268 HCAPLUS
- DN 128:223832
- TI Electrophotographic process for images of excellent environmental durability and fixability
- IN Ichikawa, Yasuhiro; Toyama, Koichi
- PA Canon K. K., Japan
- SO Jpn. Kokai Tokkyo Koho, 37 pp.  
CODEN: JKXXAF
- DT Patent
- LA Japanese
- IC ICM G03G009-08  
ICS G03G009-087; G03G009-097
- CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other

## Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10048876	A2	19980220	JP 1996-216958	19960731
AB	The process uses toners satisfying (i) wt.-av. grain size (.phi.) .ltoreq.10 .mu.m, (ii) fraction of .gtoreq.12.7-.mu.m grains in grain-size distribution .ltoreq.20%, and (iii) (b/a) 0.4-0.98 and (c/a) 0.3-0.95 on av., resp. (a, b, c = each side of circumscribed rectangular parallelepipeds satisfying a .gtoreq. b .gtoreq. c). The process uses toners satisfying (i) and (ii) and contg. substances having endothermic peaks at 45-115.degree.. The process, using above toners satisfying  Q1  <  Q2  and (c/a) .times. 12 + 3 .ltoreq.  Q  .ltoreq. (c/a) .times. 16 + 41 [ Q  = abs. value of toner charge; Q1, Q2 = Q at the center and edge parts of the rollers, resp.], is also claimed.				
ST	electrophotog toner image environmental durability; fixability electrophotog toner shape size control				
IT	Azo compounds RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (complexes with metals, charge-controlling agents; electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	Electrophotographic toners Electrophotography <b>Lubricants</b> (electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	Carbon black, uses RL: TEM (Technical or engineered material use); USES (Uses) (electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	Alcohols, uses RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (long-chain, linear, <b>lubricants</b> ; electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	Paraffin waxes, uses Waxes RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) ( <b>lubricants</b> ; electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	Coordination compounds RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (with monoazo compds., charge-controlling agents; electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	84179-66-8	104815-18-1	185222-16-6	202875-17-0	
	RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (charge-controlling agents; electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	78335-24-7, Butyl acrylate-butyl maleate-styrene copolymer RL: TEM (Technical or engineered material use); USES (Uses) (electrophotog. using toners of uniform size and shape characteristics for durable images)				
IT	100-42-5D, reaction products with waxes 9003-07-0, Polypropylene 204375-77-9, 1-Nonatetracontanol RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)				

(lubricants; electrophotog. using toners of uniform size and shape characteristics for durable images)

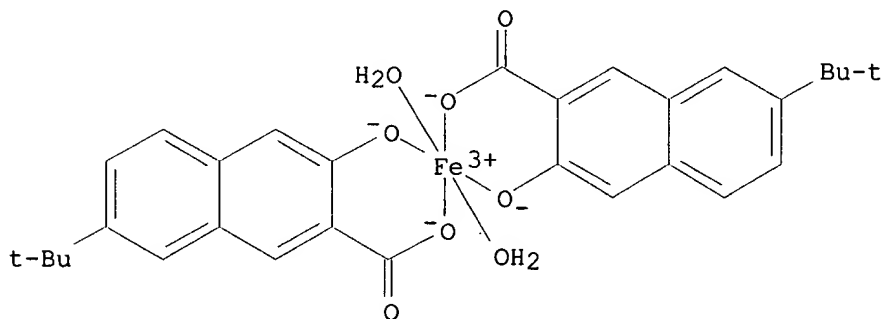
IT 202875-17-0

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(charge-controlling agents; electrophotog. using toners of uniform size and shape characteristics for durable images)

RN 202875-17-0 HCAPLUS

CN Ferrate(1-), diaquabis[7-(1,1-dimethylethyl)-3-(hydroxy-.kappa.O)-2-naphthalenecarboxylato(2-)-.kappa.O]-, sodium (9CI) (CA INDEX NAME)



● Na<sup>+</sup>

L29 ANSWER 6 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:506743 HCAPLUS

DN 127:150873

TI **Lubricating** oil for internal-combustion engines

IN Hosonuma, Kunihiro; Naitoh, Yasushi; Imori, Toru; Nakamura, Kouichi

PA Japan Energy Corporation, Japan; Hosonuma, Kunihiro; Naitoh, Yasushi;

Imori, Toru; Nakamura, Kouichi

SO PCT Int. Appl., 30 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

IC ICM C10M169-04

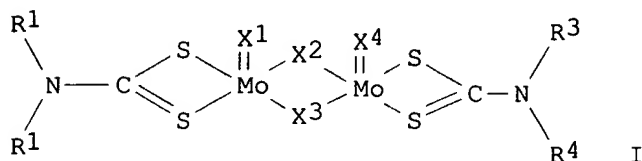
ICS C10M141-12; C10M135-18; C10N010-12; C10N030-06; C10N040-25

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	-----	-----	-----	-----
PI	WO 9723587	A1	19970703	WO 1996-JP3760	19961224
	W: CA, CN, JP, KR, SG, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	CA 2213075	AA	19970703	CA 1996-2213075	19961224
	EP 811674	A1	19971210	EP 1996-942626	19961224
	EP 811674	B1	20020522		
	R: DE, FR, GB				
	CN 1175973	A	19980311	CN 1996-192083	19961224
	JP 2957012	B2	19991004	JP 1996-523506	19961224
	US 5916851	A	19990629	US 1997-894712	19970811
PRAI	JP 1995-349563	A	19951222		
	JP 1996-40306	A	19960205		

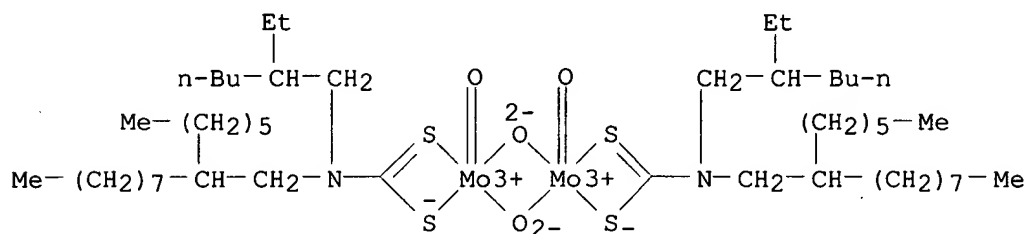
WO 1996-JP3760 W 19961224  
 OS MARPAT 127:150873  
 GI



- AB A **lubricating** oil for internal-combustion engines comprises a base oil comprising a mineral oil and/or a synthetic **lubricating** oil and 0.005-0.2 wt.%, in terms of molybdenum (Mo), of molybdenum oxysulfide dithiocarbamate represented by chem. formula I, wherein R1 or R1 and R3 represent each a branched aliph. hydrocarbon radical having 14 or more carbon atoms and R2-R4 or R2 and R4 represent each an aliph. hydrocarbon radical having 4 or more carbon atoms, and X1-X4 = O or S independently.
- ST **lubricating** oil internal combustion engine; molybdenum oxysulfide dithiocarbamate
- IT **Lubricating** oils  
 (crankcase, fuel-saving; prepn. of antifriction additives for **lubricating** oils for internal-combustion engines)
- IT 289-06-5D, Thiadiazole, derivs.  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (additives; prepn. of antifriction additives for **lubricating** oils for internal-combustion engines contg.)
- IT 152618-44-5, Irganox L 135  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (antioxidant; prepn. of antifriction additives for **lubricating** oils for internal-combustion engines contg.)
- IT 53158-78-4P, 2-Hexyldecyl chloride 193087-27-3P  
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
 (in prepn. of antifriction additives for **lubricating** oils for internal-combustion engines)
- IT 75-15-0, Carbon disulfide, reactions 104-75-6, 2-Ethylhexylamine 2425-77-6, 2-Hexyl-1-decanol 7719-09-7, Thionyl chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in prepn. of antifriction additives for **lubricating** oils for internal-combustion engines)
- IT 193229-18-4P 193229-19-5P  
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
 (prepn. of antifriction additives for **lubricating** oils for internal-combustion engines)
- IT 4259-15-8, Zinc O,O-bis(2-ethylhexyl) phosphorodithioate 53423-98-6  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (prepn. of antifriction additives for **lubricating** oils for internal-combustion engines contg.)
- IT 193229-18-4P 193229-19-5P  
 RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)  
 (prepn. of antifriction additives for **lubricating** oils for internal-combustion engines)
- RN 193229-18-4 HCAPLUS

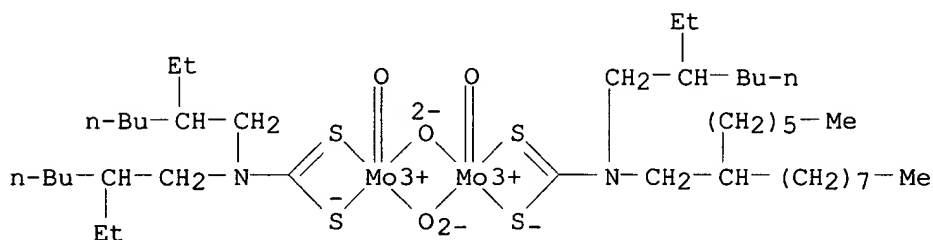


CN Molybdenum, bis[(2-ethylhexyl)(2-hexyldecyl)carbamodithioato-.kappa.S,.kappa.S']di-.mu.-oxodioxodi- (9CI) (CA INDEX NAME)



RN 193229-19-5 HCAPLUS

CN Molybdenum, [bis(2-ethylhexyl)carbamodithioato-.kappa.S,.kappa.S'][(2-ethylhexyl)(2-hexyldecyl)carbamodithioato-.kappa.S,.kappa.S']di-.mu.-oxodioxodi- (9CI) (CA INDEX NAME)



L29 ANSWER 7 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:506627 HCAPLUS

DN 127:137370

TI Additives usable in preparation of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions

IN Makipeura, Petri; Kapanen, Mika; Tulisalo, Jukka; Koskimies, Salme

PA Neste Oy, Finland; Makipeura, Petri; Kapanen, Mika; Tulisalo, Jukka; Koskimies, Salme

SO PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C07D307-60

CC 46-3 (Surface Active Agents and Detergents)

Section cross-reference(s): 17, 27, 43, 51

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9723474	A1	19970703	WO 1996-FI657	19961212
	W:	AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN			
	RW:	AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE			
	FI 9506220	A	19970623	FI 1995-6220	19951222
	AU 9710681	A1	19970717	AU 1997-10681	19961212
	EP 883615	A1	19981216	EP 1996-940676	19961212

R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE

PRAI FI 1995-6220 19951222

WO 1996-FI657 19961212

AB The title additives include quinone and hydroquinone derivs. as well as dialkyl sulfoxides and transition-metal acetylacetonate, added in approx. 0.01-2 mol% of the amt. of maleic anhydride. The olefin is preferably a C6-20 linear .alpha.-olefin or a linear or branched internal olefin. The olefin may also be a polyolefin of mol. wt. 900-1500. The prepn. process may be of the batch type or the semi-batch type, and the maleic anhydride and the additive may be added in several steps or as a continuous feed which may be even or variable. The products obtained may be used as food additives, for hydroxy sizing of paper, or as a dispersing agent in **lubricants**. In the presence of 2,5-dihydroxy-p-benzoquinone (I), dodecenylsuccinic anhydride yield was 71.8%, 1-dodecene loss 3.7%, and maleic anhydride loss 23.9%, compared with 36.7, 34.9, and 63.3, resp., without I.

ST alkenylsuccinic anhydride manuf quinone catalyst; hydroquinone catalyst alkenylsuccinic anhydride manuf; sulfoxide catalyst alkenylsuccinic anhydride manuf; maleic anhydride olefin reaction catalyst; dodecene reaction maleic anhydride catalyst

IT Addition reaction catalysts

Dispersing agents

Food additives

(additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT Alkenes, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT **Lubricants**

(dispersants; additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT Sizes (agents)

(for paper; additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT Paper

(sizes; additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT 67-68-5, Dimethyl sulfoxide, uses 81-61-8, 1,2,5,8-Tetrahydroxyanthraquinone 130-15-4, p-Naphthoquinone 571-60-8, 1,4-Naphthalenediol 615-94-1, 2,5-Dihydroxy-p-benzoquinone 7507-48-4 17524-05-9, Molybdenyl acetylacetonate

RL: CAT (Catalyst use); USES (Uses)

(additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT 9002-88-4DP, Polyethylene, pyrolyzed

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT 19532-92-4P, 1-Dodecenylsuccinic anhydride 28777-98-2P, Octadecenylsuccinic anhydride 30850-36-3P, Pentadecenylsuccinic anhydride 32072-96-1P, Hexadecenylsuccinic anhydride 33806-58-5P,

Tetradecenylsuccinic anhydride 62273-05-6P, Heptadecenylsuccinic anhydride 140605-88-5P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT 108-31-6, Maleic anhydride, reactions 112-41-4, 1-Dodecene 25377-82-6, Tridecene 26266-05-7, Heptadecene 26952-13-6, Tetradecene 27070-58-2, Octadecene 27251-68-9, Pentadecene

RL: RCT (Reactant); RACT (Reactant or reagent)

(additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

IT 28602-88-2, 1-Butene-2-butene copolymer

RL: RCT (Reactant); RACT (Reactant or reagent)

(oligomeric; additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

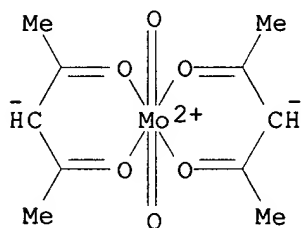
IT 17524-05-9, Molybdenyl acetylacetonate

RL: CAT (Catalyst use); USES (Uses)

(additives usable in prepn. of alkenylsuccinic anhydride from olefins and maleic anhydride with improved product yields and reduced side reactions)

RN 17524-05-9 HCAPLUS

CN Molybdenum, dioxobis(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-21)-(9CI) (CA INDEX NAME)



L29 ANSWER 8 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:153543 HCAPLUS

DN 124:236937

TI Engine oil mixtures

IN Tanaka, Noriyoshi; Fukushima, Aritoshi; Tatsumi, Yukio; Morita, Kazuhisa; Saito, Yoko

PA Asahi Denka Kogyo Kabushiki Kaisha, Japan

SO PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

IC ICM C10M141-12

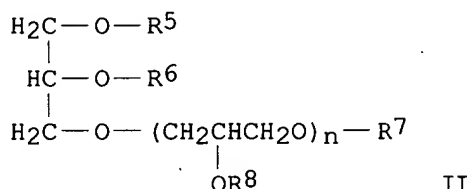
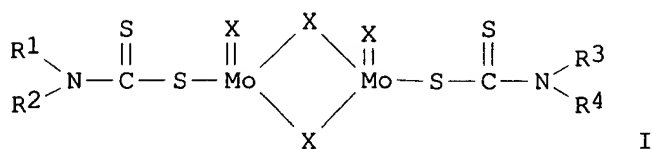
ICI C10M141-12, C10M139-00, C10M137-10, C10M129-72, C10M129-95

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	WO 9601302	A1	19960118	WO 1995-JP1333	19950704
	W: CA, US				
	RW: BE, DE, ES, FR, GB, IT, LU, SE				

JP 08020786	A2	19960123	JP 1994-175934	19940705
JP 08067890	A2	19960312	JP 1994-203503	19940829
CA 2170503	AA	19960118	CA 1995-2170503	19950704
EP 718395	A1	19960626	EP 1995-923580	19950704
EP 718395	B1	20020306		
R: BE, DE, ES, FR, GB, IT, LU, SE				
US 5696065	A	19971209	US 1996-602800	19960304
PRAI JP 1994-175934	A	19940705		
JP 1994-203503	A	19940829		
WO 1995-JP1333	W	19950704		
OS MARPAT 124:236937				
GI				



- AB The mixts. contain a Mo dithiocarbamate I [MoDTC, R1-4 = C8-16 alkyl group, X = S or O with a S:O at. ratio = (1-3):(1-3)] 0.03-1, .gtoreq.1 Zn dithiophosphates Zn[(RO)2PS2]2.a ZnO (R = C3-14 alkyl group and a = 0 or 1/3) 0.01-2, and an engine oil 100 parts. The Zn dithiophosphates contain .gtoreq.50% of .gtoreq.1 dithiophosphates having R = primary C8-14 alkyl group. The mixts. may also contain 0.1-5 parts of Poly glycerin deriv. II, where R5-8 = H or C8-20 acyl group but not all R5-8 = H at the same time.
- ST engine oil molybdenum dithiocarbamate zinc dithiophosphate; glycerin deriv engine oil
- IT **Lubricating oils**  
(compns. of engine oil mixts.)
- IT 90-30-2 110-14-5D, Succinamide, alkyl derivs., boric acid derivs. 1338-43-8, Sorbitan monooleate 4259-15-8 4563-56-8 4563-56-8D, basic 7059-16-7 7059-16-7D, basic 7282-28-2 7282-28-2D, basic 7439-98-7D, Molybdenum, thioxo dithiocarbamate complexes 25496-72-4, Glycerine monooleate 25637-84-7, Glycerin dioleate 26329-15-7 26329-15-7D, basic 29116-98-1, Sorbitan dioleate 34406-66-1, Decaglycerin monolaurate 49553-76-6, Diglycerin monooleate 51033-38-6, Hexaglycerin monolaurate 67965-56-4, Diglycerin dioleate 76009-37-5 77414-73-4D, molybdenum thioxo complexes 79665-92-2, Hexaglycerin monooleate 79665-93-3, Decaglycerin monooleate 79665-94-4 83689-44-5 90901-25-0 104934-17-0, Hexaglycerin pentaoleate 162195-91-7 174392-00-8 174721-10-9 174721-15-4 174721-21-2D, molybdenum thioxo complexes 174756-30-0
- RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(compns. of engine oil mixts.)

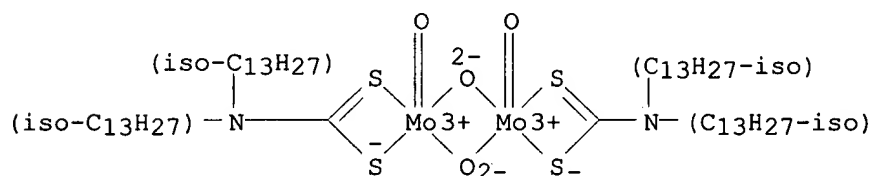
IT 12725-40-5, Suj-2  
 RL: MSC (Miscellaneous)  
 (low corrosion compns. of engine oil mixts. for SUJ-2)

IT 7440-50-8, Copper, miscellaneous  
 RL: MSC (Miscellaneous)  
 (low corrosion compns. of engine oil mixts. for copper)

IT 174721-10-9 174721-15-4  
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (compns. of engine oil mixts.)

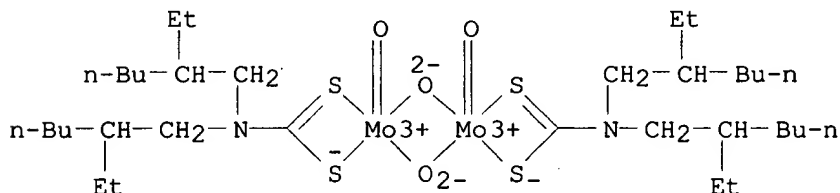
RN 174721-10-9 HCAPLUS

CN Molybdenum, bis(diisotridecylcarbamdithioato-S,S')di-.mu.-oxodioxodi-  
 (9CI) (CA INDEX NAME)



RN 174721-15-4 HCAPLUS

CN Molybdenum, bis[bis(2-ethylhexyl)carbamdithioato-S,S']di-.mu.-oxodioxodi-  
 (9CI) (CA INDEX NAME)



L29 ANSWER 9 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1995:835586 HCAPLUS

DN 123:233151

TI **Lubricating** oil composition containing an oxymolybdenum monoglyceride or oxymolybdenum diethylate amide and a metal dithiocarbamate

IN Tomizawa, Hirotaka; Tokashiki, Michihide

PA Exxon Research and Engineering Co., USA

SO PCT Int. Appl., 20 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C10M137-00

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

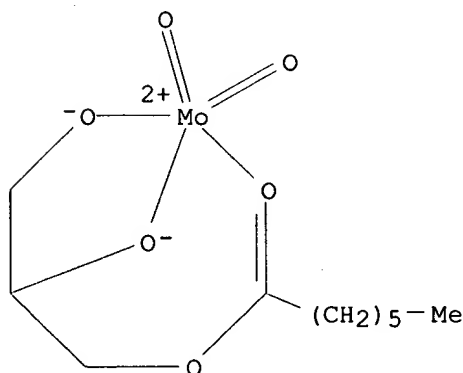
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9515368	A1	19950608	WO 1994-US13767	19941129
	W: CA, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	JP 07150177	A2	19950613	JP 1993-329721	19931130
	CA 2174931	AA	19950608	CA 1994-2174931	19941129

EP 731829 A1 19960918 EP 1995-904189 19941129  
 R: BE, DE, FR, GB, IT, NL  
 PRAI JP 1993-329721 19931130  
 WO 1994-US13767 19941129  
 OS MARPAT 123:233151  
 GI



- AB A **lubricating** oil compn. comprising a basestock oil and, based on the oil compn., (a) 0.01 to 10 % by wt. of oxymolybdenum monoglyceride or oxymolybdenum diethylate amide and (B) 0.5 to 7 % by wt. of a metal dithiocarbamate represented by I, where M represents metal such as zinc, R1 to R4 represent C1-C30 oleophilic group at least one of which is a secondary oleophilic group. The compn. may also contain (C) 0.01 to 5 % by wt. of an org. amide compd. The **lubricating** oil compn. is excellent in wear resistance, exhibiting a low coeff. of friction, capable of improving fuel economy and improved for copper corrosiveness, as well as capable of providing a low coeff. of friction already from the initial stage of operation.
- ST **lubricating** oil oxymolybdenum compd
- IT **Lubricating** oil additives  
 (antifriction-low corrosivity; **lubricating** oil compn. contg. oxymolybdenum monoglyceride or oxymolybdenum diethylate amide and a metal dithiocarbamate)
- IT 594-07-0D, Dithiocarbamic acid, metal salts **151813-89-7**  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (**lubricating** oil compn. contg. oxymolybdenum monoglyceride or oxymolybdenum diethylate amide and a metal dithiocarbamate)
- IT **151813-89-7**  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (**lubricating** oil compn. contg. oxymolybdenum monoglyceride or oxymolybdenum diethylate amide and a metal dithiocarbamate)
- RN 151813-89-7 HCAPLUS
- CN Molybdenum, [2,3-dihydroxypropyl heptanoato(2-)]dioxo- (9CI) (CA INDEX NAME)



L29 ANSWER 10 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1995:823371 HCAPLUS

DN 123:291551

TI Thiocarbamates as antiwear additives in motor oils for metal and ceramic engines

IN Hong, Hyun-Soo

PA Lubrizol Corp., USA

SO U.S., 8 pp. Cont.-in-part of U.S. Ser. No. 12, 076, abandoned.

CODEN: USXXAM

DT Patent

LA English

IC ICM C10M135-18

NCL 252033600

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5445749	A	19950829	US 1994-294295	19940823
	CA 2114287	AA	19940802	CA 1994-2114287	19940126
	JP 06256782	A2	19940913	JP 1994-7258	19940126
	AU 9453985	A1	19940804	AU 1994-53985	19940127
	AU 665292	B2	19951221		
	ES 2132334	T3	19990816	ES 1994-300691	19940131
PRAI	US 1993-12076		19930201		
AB	Hybrid engines contg. a metal-ceramic interface can be <b>lubricated</b> with compn. comprising a carrier fluid and a thiocarbamate, e.g., Mo N-oleyl dithiocarbamate. Friction and wear are low even when detergent and dispersant additives are present in the <b>lubricant</b> .				
ST	motor oil antiwear additive molybdenum thiocarbamate				
IT	Engines (metal/ceramic; thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)				
IT	Fuels, diesel Fuels, jet aircraft (thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)				
IT	Gasoline Kerosine Petroleum gases, liquefied RL: TEM (Technical or engineered material use); USES (Uses) (thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)				
IT	Fuel oil additives <b>Lubricating</b> oil additives (antiwear, thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)				
IT	<b>Lubricating</b> oils (crankcase, antiwear additives; thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)				
IT	Natural gas RL: TEM (Technical or engineered material use); USES (Uses) (liquefied, thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)				
IT	12033-89-5, Silicon nitride, uses RL: DEV (Device component use); USES (Uses) (thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)				
IT	594-07-0D, Carbamodithioic acid, alkyl derivs., amides or esters, salts 594-07-0D, Carbamodithioic acid, hydrocarbyl-, molybdenum salts 7439-89-6D, Iron, salts with N,N-di-2-ethylhexyl-dithiocarbamate				

7440-31-5D, Tin, salts with N,N-di-2-ethylhexyl-dithiocarbamate  
 7440-32-6D, Titanium, salts with N,N-di-2-ethylhexyl-dithiocarbamate  
 7440-45-1D, Cerium, salts with N,N-di-2-ethylhexyl-dithiocarbamate  
 7440-47-3D, Chromium, salts with N,N-di-2-ethylhexyl-dithiocarbamate  
 15991-76-1 19396-68-0 53423-98-6 90901-24-9 94266-20-3  
 118912-91-7 118912-92-8 118912-93-9 118912-94-0 120085-60-1  
 157774-94-2 157774-95-3 157774-96-4 157774-97-5 157801-00-8  
 157801-01-9 157801-02-0 157801-03-1 158241-44-2

RL: MOA (Modifier or additive use); USES (Uses)  
 (thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)

IT 64-17-5, Ethanol, uses

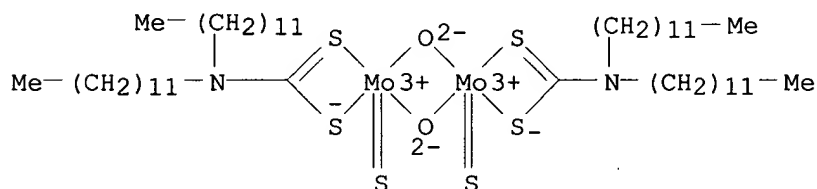
RL: TEM (Technical or engineered material use); USES (Uses)  
 (thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)

IT 19396-68-0

RL: MOA (Modifier or additive use); USES (Uses)  
 (thiocarbamates as antiwear additives in motor oils for metal and ceramic engines)

RN 19396-68-0 HCAPLUS

CN Molybdenum, bis(didodecylcarbamodithioato-S,S')di-.mu.-oxodithioxodi-(9CI) (CA INDEX NAME)



L29 ANSWER 11 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1995:261240 HCAPLUS

DN 122:110438

TI **Lubricating** oil composition containing organomolybdenum friction modifier and copper corrosion inhibitor

IN Arai, Katsuya; Tsukada, Toshikazu; Tomizawa, Hirotaka

PA Tonen Corp., Japan

SO U.S., 6 pp.

CODEN: USXXAM

DT Patent

LA English

IC ICM C10M137-00

NCL 252032700R

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5364545	A	19941115	US 1993-89130	19930709
	WO 9502027	A1	19950119	WO 1994-US7663	19940708

W: CA

RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE  
 PRAI US 1993-89130 19930709

OS MARPAT 122:110438

AB An improved **lubricating** oil compn. having a low coeff. of friction and reduced copper corrosion comprising (a) a **lubricating** oil basestock, (b) 0.01-10 wt.%, based on the oil compn., of .gtoreq.1



oxymolybdenum compds. selected from the group consisting of oxymolybdenum monoglyceride and oxymolybdenum diethylatoamide; and (c) 0.5-7 wt.%, based on the oil compn., of .gtoreq.1 organozinc compd. selected from the group consisting of zinc dithiophosphate and zinc dithiocarbamate.

ST **lubricating** oil antifriction anticorrosion organomolybdenum compd

IT Amides, uses

RL: MOA (Modifier or additive use); USES (Uses)  
(diethylato-, oxymolybdenum complexes; **lubricating** oil compn. contg. organomolybdenum friction modifier and copper corrosion inhibitor)

IT **Lubricating** oil additives

(**lubricating** oil compn. contg. organomolybdenum friction modifier and copper corrosion inhibitor)

IT Glycerides, uses

RL: MOA (Modifier or additive use); USES (Uses)  
(mono-, oxymolybdenum; **lubricating** oil compn. contg. organomolybdenum friction modifier and copper corrosion inhibitor)

IT 18984-88-8, Zinc dithiocarbamate 19210-06-1, Zinc dithiophosphate 78608-41-0D, derivs., sulfurized **151813-89-7D**, derivs., sulfurized

RL: MOA (Modifier or additive use); USES (Uses)  
(**lubricating** oil compn. contg. organomolybdenum friction modifier and copper corrosion inhibitor)

IT 90901-24-9

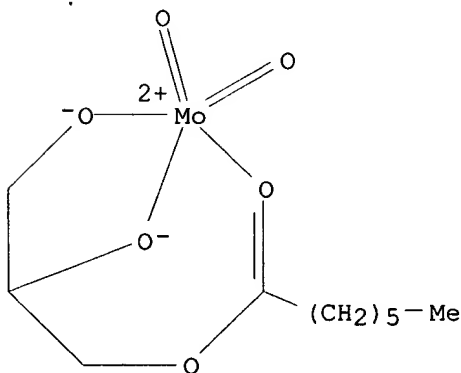
RL: MOA (Modifier or additive use); USES (Uses)  
(sulfurized; **lubricating** oil compn. contg. organomolybdenum friction modifier and copper corrosion inhibitor)

IT **151813-89-7D**, derivs., sulfurized

RL: MOA (Modifier or additive use); USES (Uses)  
(**lubricating** oil compn. contg. organomolybdenum friction modifier and copper corrosion inhibitor)

RN 151813-89-7 HCAPLUS

CN Molybdenum, [2,3-dihydroxypropyl heptanoato(2-)]dioxo- (9CI) (CA INDEX NAME)



L29 ANSWER 12 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1994:608953 HCAPLUS

DN 121:208953

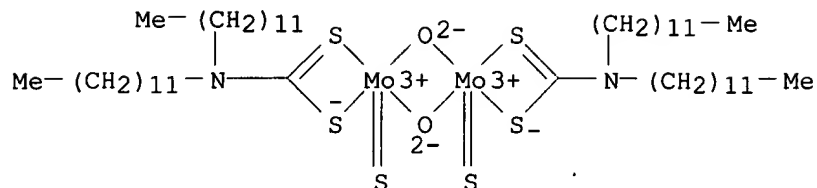
TI Use of molybdenum dithiocarbamate as an antiwear additive for ceramic/metal interface

IN Hong, Hyun-Soo

PA Lubrizol Corp., USA  
 SO Eur. Pat. Appl., 12 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 IC ICM C10M135-18  
 ICA C10N010-00; C10N010-12; C10N030-06; C10N040-25  
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)  
 Section cross-reference(s): 55, 57

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 610045	A1	19940810	EP 1994-300691	19940131
	EP 610045	B1	19990506		
	R: BE, DE, ES, FR, GB, IT, NL, SE				
	CA 2114287	AA	19940802	CA 1994-2114287	19940126
	JP 06256782	A2	19940913	JP 1994-7258	19940126
	AU 9453985	A1	19940804	AU 1994-53985	19940127
	AU 665292	B2	19951221		
	ES 2132334	T3	19990816	ES 1994-300691	19940131
PRAI	US 1993-12076		19930201		
AB	Hybrid engines contg. a metal-ceramic interface can be lubricated with compn. comprising a carrier fluid and a molybdenum thiocarbamate. Friction and wear are low even when detergent and dispersant additives are present in the lubricant.				
ST	molybdenum dithiocarbamate antiwear additive ceramic metal; lubricating oil molybdenum dithiocarbamate antiwear additive				
IT	Kerosine				
	RL: USES (Uses)				
	(antiwear additives for, contg. thiocarbamates, for ceramic/metal surfaces)				
IT	Gasoline additives				
	Lubricating oil additives				
	(antiwear, contg. thiocarbamates, for ceramic/metal surfaces)				
IT	75-15-0D, Carbon disulfide, reaction products with di(2-ethylhexyl)amine and ethylacrylate 106-20-7D, reaction products with carbon disulfide and ethylacrylate 111-92-2D, Dibutylamine, reaction products with N-Me acrylamide and carbon disulfide 140-88-5D, reaction products with di(2-ethylhexyl)amine and carbon disulfide 1187-59-3D, N-Methyl acrylamide, reaction products with dibutylamine and carbon disulfide 7439-89-6D, Iron, salts with N,N-di-2-ethylhexyl dithiocarbamate 7439-98-7D, Molybdenum, complexes with N-oleythiocarbamate 7440-31-5D, Tin, salts with N,N-di-2-ethylhexyl dithiocarbamate 7440-32-6D, Titanium, salts with N,N-di-2-ethylhexyl dithiocarbamate 7440-45-1D, Cerium, salts with N,N-di-2-ethylhexyl dithiocarbamate 7440-47-3D, Chromium, salts with N,N-di-2-ethylhexyl dithiocarbamate 14428-08-1 15991-76-1 19396-68-0 53423-98-6 90901-24-9 94266-20-3 118912-92-8 118912-93-9 118912-94-0 120085-60-1 157774-94-2 157774-95-3 157774-96-4 157774-97-5 157801-00-8 157801-01-9 157801-02-0 157801-03-1 158241-44-2				
	RL: USES (Uses)				
	(antiwear additive, for lubricating ceramic/metal interface)				
IT	19396-68-0				
	RL: USES (Uses)				
	(antiwear additive, for lubricating ceramic/metal interface)				
RN	19396-68-0 HCAPLUS				
CN	Molybdenum, bis(didodecylcarbomodithioato-S,S')di-.mu.-oxodithioxodi-(9CI) (CA INDEX NAME)				



L29 ANSWER 13 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1994:11508 HCAPLUS

DN 120:11508

TI **Lubricating** oil compositions

IN Arai, Katsuya; Tsukada, Toshikazu; Tomizawa, Hirotaka

PA Tonen Corp, Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

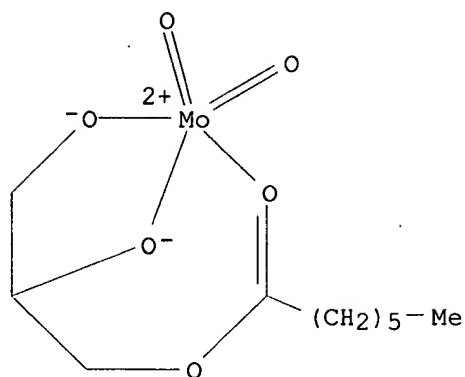
IC ICM C10M141-12

ICI C10M141-12, C10M139-00, C10M133-16, C10M135-18, C10M137-10; C10N010-04, C10N010-12, C10N030-12, C10N040-04, C10N040-08, C10N070-00

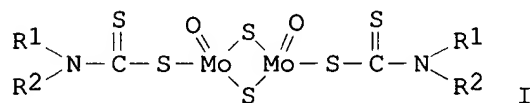
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05186789	A2	19930727	JP 1992-20409	19920109
AB	The mineral oil-based compn. contains (1) 0.01-10 oxymolybdenum monoglyceride and/or oxymolybdenum diethylated amide and (2) 0.5-7 wt.% zinc dithiophosphate and/or zinc dithiocarbamate. The compn. further contains 0.01-5 wt.% org. amide compd. The compn. improves friction and copper corrosiveness.				
ST	<b>lubricating</b> oil compn molybdenum oxide				
IT	<b>Lubricating</b> oils				
	(compns. of, copper corrosiveness improvement in)				
IT	<b>Lubricating</b> oil additives				
	(molybdenum oxide compds. in)				
IT	4259-15-8	53423-98-6	56413-77-5D,	polyisobutylene derivs.	78608-41-0
	90901-24-9	151536-82-2	<b>151813-89-7</b>		
	RL: USES (Uses)				
	(in lubricating oil compn.)				
IT	<b>151813-89-7</b>				
	RL: USES (Uses)				
	(in lubricating oil compn.)				
RN	151813-89-7 HCAPLUS				
CN	Molybdenum, [2,3-dihydroxypropyl heptanoato(2-)]dioxo- (9CI) (CA INDEX NAME)				

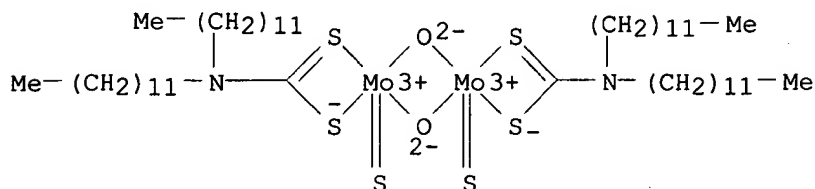


L29 ANSWER 14 OF 22 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1991:495579 HCAPLUS  
 DN 115:95579  
 TI Study on antiwear performance of molybdenum N,N-dialkyldithiocarbamates and their **lubrication** mechanism  
 AU Wei, Lixing; Yan, Zhengze; Liu, Fuying  
 CS Dep. Pet. Process., East China Inst. Chem. Technol., Shanghai, 200237, Peop. Rep. China  
 SO Huadong Huagong Xueyuan Xuebao (1990), 16(6), 694-9  
 CODEN: HHKPDJ; ISSN: 0253-9683  
 DT Journal  
 LA Chinese  
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)  
 GI



AB Mo N,N-dialkyldithiocarbonates (I; R1,R2 = cyclohexyl, 2-ethylhexyl, dodecyl, tetradecyl, octyl, hexadecyl, octadecyl) were synthesized, characterized, and tested for their antiwear properties in **lubricating** oils in a 4-ball testing app. Results from 4-ball testing indicated that the antiwear properties of I (R1 = R2 dodecyl; R1 = R2 = 2-ethylhexyl) were better than those of other additives. The dithiocarbamates promote mixing efficiency of detergents-dispersants in engine oils.  
 ST dithiocarbamate molybdenum antiwear **lubricant** additive  
 IT **Lubricating** oil additives  
 (antiwear, molybdenum N,N-dialkyldithiocarbamates)  
 IT 19396-68-0 90901-24-9 135349-10-9 135349-11-0 135349-12-1  
 135539-64-9 135539-65-0  
 RL: USES (Uses)  
 (**lubricating** oil antiwear additive)  
 IT 19396-68-0  
 RL: USES (Uses)  
 (**lubricating** oil antiwear additive)  
 RN 19396-68-0 HCAPLUS

CN Molybdenum, bis(didodecylcarbamodithioato-S,S')di-.mu.-oxodithioxodi-  
(9CI) (CA INDEX NAME)



L29 ANSWER 15 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1988:59275 HCAPLUS

DN 108:59275

TI High-pressure **lubricating** grease compositions for automobile parts

IN Tsuchiya, Masanori; Okaniwa, Takashi

PA Kyodo Oils and Fats Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C10M169-00

ICI C10M169-00, C10M105-80, C10M151-00, C10M153-00, C10M155-00, C10M159-12; C10N030-06, C10N040-04, C10N050-10

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

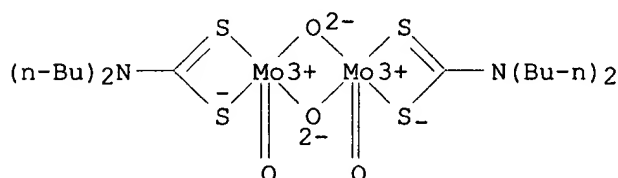
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62207397	A2	19870911	JP 1986-47412	19860306
	JP 04034590	B4	19920608		
AB	Title compns. comprise base grease materials, 0.5-10% sulfurized Mo dialkyldithiocarbamates (R1R2NCS2)2Mo2OmSn (I; R1R2 = C1-24 alkyl; m = 0-3; n = 1-4; m + n = 4), and .gtoreq.1 of sulfurized fats and oils, sulfurized olefins, tricresyl phosphate (II), trialkyl thiophosphates, and Zn dialkyl dithiophosphates 0.5-10%. Thus, a compn. of urea grease (20% dispersion of the reaction product of diphenylmethane diisocyanate with stearylamine in purified mineral oil showing viscosity 10 cSt at 100.degree.) 93, I (R1 = R2 = Bu, n = 4) 3, a sulfurized olefin (10% S) 2, and II 2 parts showed friction coeff. 0.03, vibration acceleration in a geared motor 0.32 G, and no vibration and abrasion in a const. velocity joint.				
ST	high pressure <b>lubricating</b> grease additive; automobile const velocity joint grease; sulfurized molybdenum dialkyldithiocarbamate grease additive; olefin sulfurized <b>lubricating</b> grease additive; urea sulfurized <b>lubricating</b> grease additive; cresyl phosphate <b>lubricating</b> grease additive; alkyl thiophosphate <b>lubricating</b> grease additive; zinc alkyl dithiophosphate grease additive				
IT	Alkenes, compounds Lard RL: USES (Uses) (sulfurized, extreme-pressure additives contg., for <b>lubricating</b> greases for automobile const. velocity joints)				
IT	<b>Lubricating</b> grease additives (extreme-pressure, sulfurized molybdenum dialkyldithiocarbamate-org. (thio)phosphate, for automobile const. velocity joints)				

IT 1330-78-5, Tricresyl phosphate 15834-33-0D, trialkyl esters  
 36539-29-4D, sulfurized 95267-17-7  
 RL: USES (Uses)  
 (high-pressure additives contg., for lubricating greases for  
 automobile const. velocity joints)

IT 95267-17-7  
 RL: USES (Uses)  
 (high-pressure additives contg., for lubricating greases for  
 automobile const. velocity joints)

RN 95267-17-7 HCAPLUS

CN Molybdenum, bis(dibutylcarbamodithioato-S,S')di-.mu.-oxodioxodi- (9CI)  
 (CA INDEX NAME)



L29 ANSWER 16 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1984:86731 HCAPLUS

DN 100:86731

TI Tetrapentylammonium molybdates

IN Kroenke, William J.

PA Goodrich, B. F., Co., USA

SO U.S., 4 pp.

CODEN: USXXAM

DT Patent

LA English

IC C07F011-00

NCL 260429000R

CC 37-6 (Plastics Manufacture and Processing)

Section cross-reference(s): 49

FAN.CNT 7

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4410463	A	19831018	US 1982-402481	19820728
	CA 1219270	A1	19870317	CA 1983-432411	19830714
	EP 100087	A2	19840208	EP 1983-107317	19830726
	EP 100087	A3	19840307		
	R: CH, DE, FR, GB, LI, NL				
	JP 59051243	A2	19840324	JP 1983-136005	19830727
PRAI	US 1982-402477		19820728		
	US 1982-402478		19820728		
	US 1982-402479		19820728		
	US 1982-402480		19820728		
	US 1982-402481		19820728		
	US 1982-402482		19820728		
	US 1982-402484		19820728		

AB Tetrapentylammonium molybdates having the formula  $[(CH_3(CH_2)_4)_4N]_a Mo b O c H d$  [a, b, c = (2, 2, 7), (3, 5, 17), (2, 6, 19), (6, 7, 24), or (4, 8, 26); d = 0, 1] are useful as smoke retardants for PVC. Thus, a mixt. of 10.00 g tetrapentylammonium bromide [866-97-7], 2.60 g 37% HCl, and 200 mL water was treated with a soln. of 8.98 g  $(NH_4)_2 Mo_2 O_7$  [27546-07-2] in 50 mL water. The mixt. was refluxed for 30 min and worked up to give a yellow product which was a mixt. of tetrapentylammonium hexamolybdate (I)

[88814-96-4] and tetrapentylammonium .alpha.-octamolybdate (II) [88845-74-3]. A compn. contg. PVC [9002-86-2] 100.0, **lubricant** 2.0, Sn stabilizer 2.0, and I-II mixt. 2.0 parts was milled and pressed into sheets having 34.6 max. smoke d./g resin, vs. 60.8 for a control prep'd. without the molybdate mixt.

ST pentylammonium molybdate smoke retardant; molybdate tetrapentylammonium smoke retardant; PVC molybdate smoke retardant; ammonium molybdate smoke retardant

IT Smoke

(suppressants, tetrapentylammonium molybdates, for PVC)

IT 866-97-7

RL: RCT (Reactant)

(reaction of, with ammonium dimolybdate)

IT 27546-07-2

RL: RCT (Reactant)

(reaction of, with tetrapentylammonium bromide)

IT 2052-49-5

RL: RCT (Reactant)

(reaction of, with tetrapentylammonium octamolybdate)

IT 9002-86-2

RL: USES (Uses)

(smoke retardants for, tetrapentylammonium molybdates as)

IT 88814-93-1 88814-94-2 **88814-95-3** 88814-96-4 88845-74-3

RL: USES (Uses)

(smoke retardants, for PVC)

IT **88814-95-3**

RL: USES (Uses)

(smoke retardants, for PVC)

RN 88814-95-3 HCAPLUS

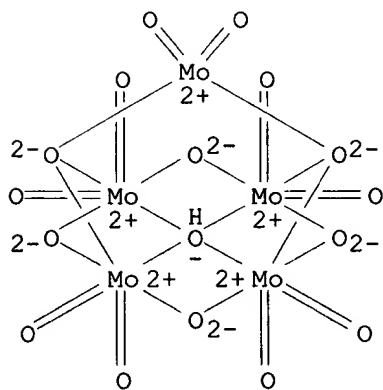
CN 1-Pentanaminium, N,N,N-tripentyl-, .mu.4-hydroxytetra-.mu.-oxodi-.mu.3-oxodecaoxopentamolybdate(3-) (3:1) (9CI) (CA INDEX NAME)

CM 1

CRN 66812-15-5

CMF H Mo5 O17

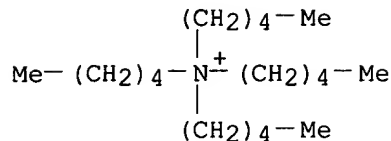
CCI CCS



CM 2

CRN 15959-61-2

CMF C20 H44 N



L29 ANSWER 17 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1984:35335 HCAPLUS

DN 100:35335

TI Methyltricaprylammonium molybdates

IN Kroenke, William J.

PA Goodrich, B. F., Co., USA

SO U.S., 4 pp.

CODEN: USXXAM

DT Patent

LA English

IC C07F011-00

NCL 260429000R

CC 37-6 (Plastics Manufacture and Processing)

FAN.CNT 7

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4406837	A	19830927	US 1982-402479	19820728
	CA 1219270	A1	19870317	CA 1983-432411	19830714
	EP 100087	A2	19840208	EP 1983-107317	19830726
	EP 100087	A3	19840307		
	R: CH, DE, FR, GB, LI, NL				
	JP 59051243	A2	19840324	JP 1983-136005	19830727
PRAI	US 1982-402477		19820728		
	US 1982-402478		19820728		
	US 1982-402479		19820728		
	US 1982-402480		19820728		
	US 1982-402481		19820728		
	US 1982-402482		19820728		
	US 1982-402484		19820728		

AB Methyltricaprylammonium molybdates having the formula  
 $[\text{CH}_3[\text{CH}_2(\text{CH}_2)_7]_3\text{N}]\text{aMobOCHd}$  [a, b, c = (2, 1, 4), (2, 2, 7), (3, 5, 17), (2, 6, 19), (4, 8, 26), or (6, 7, 24); d = 0, 1] are useful as smoke retardants for PVC [9002-86-2] compns. Thus, to a mixt. of 20.00 g methyltricaprylammonium chloride (Aliquat 336), 3.92 g 37% HCl, and 400 mL H<sub>2</sub>O was added a soln. of 13.92 g ammonium dimolybdate in 100 mL H<sub>2</sub>O. The mixt. was heated and stirred at 50.degree. for 1 h to give a light green waxy solid product identified as methyltricaprylammonium .beta.-octamolybdate (I). Max. smoke d./g of a sample contg. PVC resin 100.0, lubricant 2.0, Sn stabilizer 2.0, and I 5.0 parts was reduced by 58.1% to 25.6 compared to 60.8 for a control not contg. I.

ST methyltricaprylammonium molybdate smoke retardant; molybdate methyltricaprylammonium smoke retardant; PVC molybdate smoke retardant

IT Smoke

(suppressants, methyltricaprylammonium molybdates as, for PVC)

IT Quaternary ammonium compounds, uses and miscellaneous

RL: USES (Uses)

(tri-C8-10-alkylmethyl, molybdates, smoke retardants, for PVC)

IT 9002-86-2

RL: USES (Uses)

(smoke retardants for, methyltricaprylammonium molybdates as)



IT 11132-40-4D, trialkylmethylammonium salts 12346-58-6D,  
trialkylmethylammonium salts 14259-85-9D, trialkylmethylammonium salts  
19282-23-6D, trialkylmethylammonium salts **66812-15-5D**,  
trialkylmethylammonium salts 88194-70-1 88194-85-8 88194-86-9  
**88205-54-3** 88449-43-8

RL: USES (Uses)

(smoke retardants, for PVC)

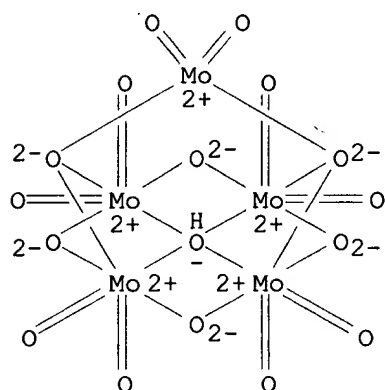
IT **66812-15-5D**, trialkylmethylammonium salts **88205-54-3**

RL: USES (Uses)

(smoke retardants, for PVC)

RN 66812-15-5 HCAPLUS

CN Molybdate (Mo5(OH)O163-) (9CI) (CA INDEX NAME)



RN 88205-54-3 HCAPLUS

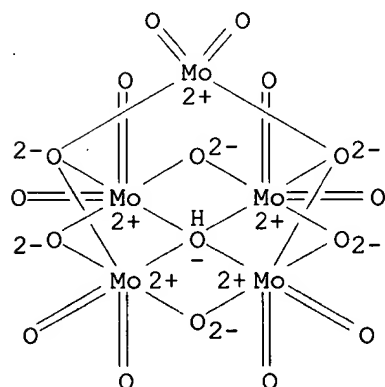
CN 1-Octanaminium, N-methyl-N,N-dioctyl-, .mu.4-hydroxytetra-.mu.-oxodi-.mu.3-  
oxodecaoxopentamolybdate(3-) (3:1) (9CI) (CA INDEX NAME)

CM 1

CRN 66812-15-5

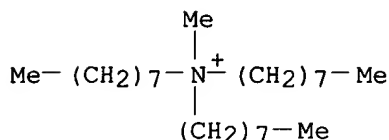
CMF H Mo5 O17

CCI CCS



CM 2

CRN 22061-11-6  
CMF C25 H54 N



L29 ANSWER 18 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1983:507936 HCAPLUS

DN 99:107936

TI **Lubricating** oils containing molybdenyl chelates

IN Ryu, Yumi P.; Hartle, Robert J.

PA Gulf Research and Development Co. , USA

SO U.S., 5 pp.

CODEN: USXXAM

DT Patent

LA English

IC C10M001-38; C10M001-54

NCL 252032700E

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4383931	A	19830517	US 1981-326698	19811202
AB	To manuf. an antifriction additive for <b>lubricating</b> oils, 10 g molybdenyl bisacetylacetonate [34346-27-5] and 22 g 2,2,7-trimethyl-3,5-octanedione (I) [69725-37-7] was heated at 80-90.degree. and 100 mm for .apprx.1 h until the mixt. became a brown homogeneous liq. Acetylacetonone was distd. at 45-50.degree. and 30 mm and the unreacted I at 100-105.degree. and 30 mm. The brown residue was dissolved in hexane and filtered, and the hexane was distd. to give 96.6% molybdenyl bis(2,2,7-trimethyl-3,5-octanedione) (II) [86991-56-2]. The addn. of 1 wt.% II and 1 wt.% Lubrizol 1395 [77907-76-7] to a com. engine oil reduced friction in a ball-on-disk test by 64.9%.				
ST	petroleum <b>lubricating</b> oil additive; antifriction petroleum <b>lubricant</b> ; molybdenyl diketone petroleum <b>lubricant</b>				
IT	<b>Lubricating</b> oil additives (antifriction, reaction products of molybdenyl bisacetylacetonate and trimethyloctanedione)				
IT	86991-56-2P 86991-57-3P 86991-58-4P 86991-59-5P 86991-60-8P RL: PREP (Preparation) (antifriction <b>lubricating</b> oil additives, manuf. of)				
IT	10254-57-6	15834-33-0D,	dialkyl esters, zinc salts	77907-76-7	
	RL: USES (Uses) ( <b>lubricating</b> oil additives, synergism of, with molybdenyl diketones)				
IT	34346-27-5				
	RL: RCT (Reactant) (reaction of, with 2,2,7-trimethyl-3,5-octanedione in <b>lubricating</b> oil additive manuf.)				
IT	69725-37-7				
	RL: RCT (Reactant) (reaction of, with molybdenyl bisacetylacetonate)*				
IT	86991-56-2P 86991-57-3P 86991-58-4P				

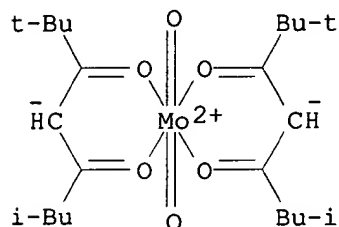
86991-59-5P 86991-60-8P

RL: PREP (Preparation)

(antifriction lubricating oil additives, manuf. of)

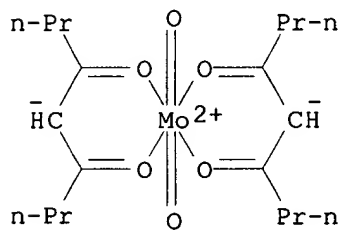
RN 86991-56-2 HCAPLUS

CN Molybdenum, dioxobis(2,2,7-trimethyl-3,5-octanedionato-O,O')- (9CI) (CA INDEX NAME)



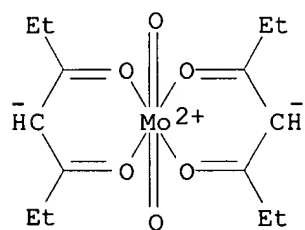
RN 86991-57-3 HCAPLUS

CN Molybdenum, bis(4,6-nonanedionato-O,O')dioxo- (9CI) (CA INDEX NAME)



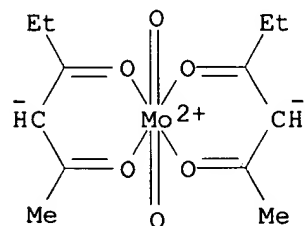
RN 86991-58-4 HCAPLUS

CN Molybdenum, bis(3,5-heptanedionato-O,O')dioxo- (9CI) (CA INDEX NAME)

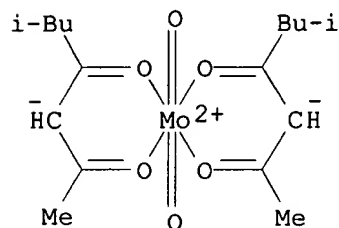


RN 86991-59-5 HCAPLUS

CN Molybdenum, bis(2,4-hexanedionato-O,O')dioxo- (9CI) (CA INDEX NAME)

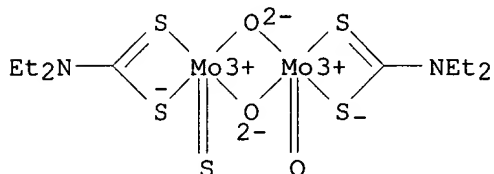


RN 86991-60-8 HCAPLUS  
 CN Molybdenum, bis(6-methyl-2,4-heptanedionato-O,O')dioxo- (9CI) (CA INDEX NAME)



- L29 ANSWER 19 OF 22 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1975:142397 HCAPLUS  
 DN 82:142397  
 TI **Lubricating** mechanism of di- $\mu$ -thio-dithio-bis(diethyldithiocarbamate) dimolybdenum during extreme pressure **lubrication**  
 AU Isoyama, H.; Sakurai, T.  
 CS Tokyo Inst. Technol., Tokyo, Japan  
 SO Tribol. Int. (1974), 7(4), 151-60  
 CODEN: TRBIBK  
 DT Journal  
 LA English  
 CC 51-7 (Fossil Fuels, Derivatives, and Related Products)  
 GI For diagram(s), see printed CA Issue.  
 AB The mechanism of pyrolysis of the title compd. (I) [54849-17-1] was investigated. The performances of I in grease and S [7704-34-9]-MoS<sub>2</sub> [1317-33-5] in oil were compared on the Shell 4-ball machine. An electron-probe microanalyzer and electron diffraction were used to examine the wear scars.  
 ST **lubrication** molybdenum complex; pyrolysis mechanism dimolybdenum grease; thiocarbamate dimolybdenum complex grease; extreme pressure dimolybdenum grease  
 IT **Lubrication**  
 (extreme-pressure, molybdenum complex additives decompn. in relation to)  
 IT **Lubricating** grease additives  
 (extreme-pressure, molybdenum complexes, performance and decompn. of)  
 IT **Lubricating** greases  
 (performance of extreme-pressure, molybdenum complexes decompn. in relation to)  
 IT 19396-66-8 36539-27-2 **55088-21-6**  
 RL: USES (Uses)  
 (antiwear performance and pyrolysis of, in **lubricating** greases)  
 IT 75-08-1P 75-15-0P, preparation 110-02-1P 542-85-8P 7783-06-4P, preparation  
 RL: FORM (Formation, nonpreparative); PREP (Preparation)  
 (formation of, in decompn. of molybdenum complex **lubricating** grease additives)  
 IT 7704-34-9, uses and miscellaneous  
 RL: USES (Uses)  
 (**lubricating** oil additives, contg. molybdenum-sulfide, for extreme pressure)  
 IT 1317-33-5

RL: USES (Uses)  
 (lubricating oil additives, contg. sulfur, for extreme pressure)  
 IT 7439-89-6, reactions  
 RL: RCT (Reactant)  
 (oxidn. and sulfurization of, in decompn. of molybdenum complex lube additives)  
 IT 55088-21-6  
 RL: USES (Uses)  
 (antiwear performance and pyrolysis of, in lubricating greases)  
 RN 55088-21-6 HCAPLUS  
 CN Molybdenum, bis(diethylcarbamodithioato-S,S')di-.mu.-oxooxothioxodi- (9CI)  
 (CA INDEX NAME)



L29 ANSWER 20 OF 22 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1970:532750 HCAPLUS  
 DN 73:132750  
 TI **Lubrication** system derived from alkyl titanate complexes  
 IN Kronstein, Max; Kapfer, William H.  
 PA United States Dept. of the Navy  
 SO U.S., 2 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 IC C07F  
 NCL 260429500  
 CC 51 (Petroleum, Petroleum Derivatives, and Related Products)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3534076	A	19701013	US 1968-701844	19680131
AB	Tetraisopropyl titanate (270 g) and Zn 2-ethylhexanoate (857 g) were mixed and distd. at <280.degree. and 1-10 mm to obtain a product which (150 g) was vacuum-distd. with triisopropyl borate (50 g) to give a distn. cut (.apprx.150 ml) at 0.1 mm and 275-80.degree.. The resulting compd. had a flame point of 325.degree. and good lubricity in the 4-ball test.				
ST	<b>lubrication</b> alkyl titanates complexes; alkyl titanates complexes <b>lubrication</b> ; titanates alkyl <b>lubrication</b> ; complexes <b>lubrication</b> alkyl titanates; zinc hexanoates <b>lubrication</b> ; hexanoates <b>lubrication</b> zinc; isopropyl borates <b>lubrication</b> ; borates <b>lubrication</b> isopropyl				
IT	Hydraulic fluids <b>Lubricants</b> (tetraisopropyl titanate-organometallic compds.)				
IT	2,4-Pentanedione, molybdenum complexes RL: PREP (Preparation) (prepn. of)				
IT	557-09-5 RL: USES (Uses)				

(reaction products with hexabutylditin and tetraisopropyltitanate, lubricants)

IT 15511-69-0  
RL: USES (Uses)  
(reaction products with organometallic compds., lubricants)

IT 813-19-4  
RL: USES (Uses)  
(reaction products with tetraisopropyl titanate and zinc octanoate, lubricants)

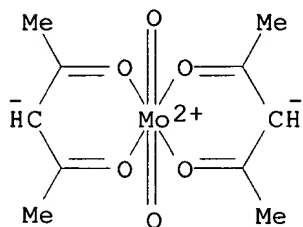
IT 136-53-8  
RL: USES (Uses)  
(reaction products with tetraisopropyltitanate and organometallic compds., lubricants)

IT 1067-55-6 1461-25-2 5035-67-6 5419-55-6 17524-05-9  
RL: USES (Uses)  
(reaction products with tetraisopropyltitanate and zincethylhexanoate)

IT 17524-05-9  
RL: USES (Uses)  
(reaction products with tetraisopropyltitanate and zincethylhexanoate)

RN 17524-05-9 HCAPLUS

CN Molybdenum, dioxobis(2,4-pentanedionato-.kappa.O,.kappa.O')-, (OC-6-21)-(9CI) (CA INDEX NAME)



L29 ANSWER 21 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1968:49139 HCAPLUS

DN 68:49139

TI Molybdenum oxysulfide dialkyldithiocarbamates

IN Farmer, Homer H.; Rowan, Eugene V.

PA Vanderbilt, R. T., Co., Inc.

SO U.S., 6 pp.  
CODEN: USXXAM

DT Patent

LA English

NCL 260429000

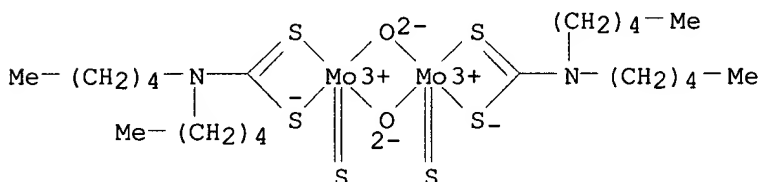
CC 23 (Aliphatic Compounds)

FAN.CNT 1

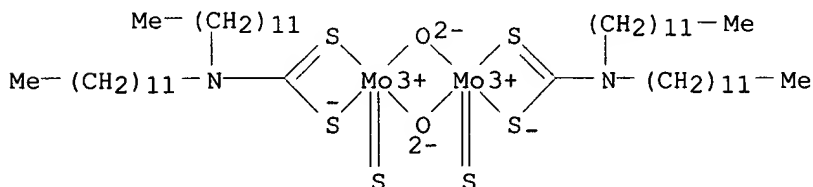
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3356702		19671205	US	19640807
AB	The title compds. were prepd. for use as extreme pressure agents, antioxidants, and wear inhibitors for lubricants. The general formula of the compds. varies within the framework [R <sub>2</sub> NCS <sub>2</sub> ] <sub>2</sub> Mo <sub>2</sub> O <sub>m</sub> Sn (m + n = 4, m = 2.35-3, n = 1.65-1, and R = an unsubstituted hydrocarbon group contg. 1-24 C atoms). Thus, 80.1 g. crude (90%) MoO <sub>3</sub> in 150 ml. H <sub>2</sub> O stirred 30 min. with 35 g. 50% NaOH, the mixt. neutralized to litmus with 50% H <sub>2</sub> SO <sub>4</sub> , and filtered, the filtrate treated with 97.2 g. Bu <sub>2</sub> NH and 76 g. CS <sub>2</sub> added dropwise, the mixt. refluxed 5.5 hrs. at 104.degree. and filtered, and the filter cake washed with H <sub>2</sub> O and PhMe, gave sulfurized Mo				

dibutyldithiocarbamate, m. 254-6.degree.. Similar products were obtained on treating pure MoO<sub>3</sub> with Bu<sub>2</sub>NH, BuOH, and CS<sub>2</sub>, and on using HCONMe<sub>2</sub> as solvent in place of BuOH in the above prepn. Also prepd. were sulfurized Mo diethyl-, dilauryl-, and di(oleylinoleyl)dithiocarbamates. Sulfurized dibutyl, diamyl, and dilauryldithiocarbamates were shown to be effective as antiwear and antioxidant agents when used at 3% concn. (the dilauryl in some cases at 6% concn.).

- ST **LUBRICANT ADDITIVES DITHIOCARBAM; ANTIOXIDANTS DITHIOCARBAMATES; PRESSURE AGENTS DITHIOCARBAMATES; MOLYBDENUM DITHIOCARBAMATES; DITHIOCARBAMATES MOLYBDENUM; ATEs**
- IT **Lubricants**  
(extreme-pressure additives for, dithiocarbamatomolybdenum complexes as)
- IT Carbamic acid, 9,12-octadecadienyl-9-octadecenylthio-, molybdenum complex, (Z,Z,Z)-  
Carbamic acid, dibutyldithio-, molybdenum complex  
Carbamic acid, didodecyldithio-, molybdenum complex  
Carbamic acid, diethyldithio-, molybdenum complex  
Carbamic acid, dipentyldithio-, molybdenum complex  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of)
- IT 19396-65-7P 19396-66-8P 19396-67-9P 19396-68-0P  
23869-10-5P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of)
- IT 19396-67-9P 19396-68-0P 23869-10-5P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of)
- RN 19396-67-9 HCAPLUS
- CN Molybdenum, bis(dipentyldithiocarbamato)di-.mu.-oxodithioxodi- (8CI) (CA INDEX NAME)

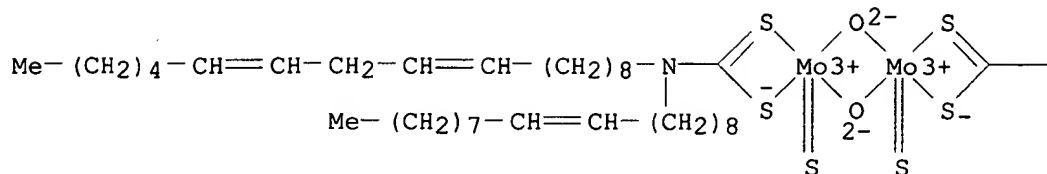


- RN 19396-68-0 HCAPLUS
- CN Molybdenum, bis(didodecylcarbamo-dithioato-S,S')di-.mu.-oxodithioxodi- (9CI) (CA INDEX NAME)

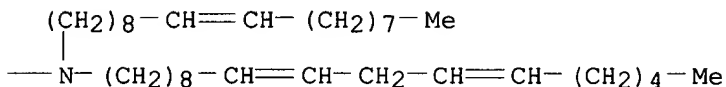


- RN 23869-10-5 HCAPLUS
- CN Molybdenum, bis(9,12-octadecadienyl-9-octadecenylthiocarbamato)di-.mu.-oxodithioxodi- (8CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L29 ANSWER 22 OF 22 HCAPLUS COPYRIGHT 2002 ACS

AN 1967:500661 HCAPLUS

DN 67:100661

TI Transparent, unplasticized poly(vinyl chloride) compositions

IN Takeda, Tomomi; Odagata, Kosei; Ando, Masayoshi; Sugihara, Yumio; Ishibashi, Tetsuji; Koshida, Toshiro; Kinbara, Akihiko

PA Japan Telegram and Telephone Corp.; Sumitomo Bakelite Co., Ltd.

SO Jpn. Tokkyo Koho, 3 pp.

CODEN: JAXXAD

DT Patent

LA Japanese

NCL 25H351

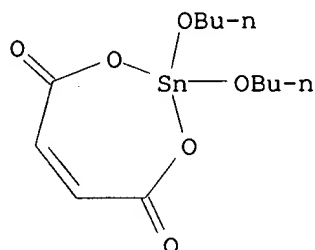
CC 36 (Plastics Manufacture and Processing)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 42007695	B4	19630329	JP	19630726
AB	Poly(vinyl chloride) (I) resin compns. having an improved heat stability, softening point, impact strength, and size stability can be prepd. by adding 1-5 parts solid Bu <sub>2</sub> Sn maleate (II) (30-5% Sn) or its derivs., 1-5 parts liquid II (16-28% Sn), and (or) 1-5 parts Bu <sub>2</sub> Sn laurate 0.5-2 parts <b>lubricant</b> , and a small amt. of uv-absorbing dyes to 100 parts I. Thus, 100 parts I (d.p. 800), 3 parts II, 2 parts liquid II, 2 parts dibutoxytin maleate, 1 part <b>lubricant</b> , and 0.0002 part phthalocyanine blue were blended. The impact strength, tensile strength, softening point, and thermal stability were 20 kg./cm., 680 kg./cm. <sup>2</sup> , 86.9.degree., and 245 min., resp.				
ST	PVC TRANSPARENT COMPNS; HEAT STABLE PVC; IMPACT RESISTANT PVC; TENSION RESISTANT PVC; TRANSPARENT PVC COMPNS				
IT	<b>Lubricants</b> (in chloroethylene polymers, stabilization and transparency in relation to)				
IT	Light, ultraviolet, chemical and physical effects (stabilizers, dyes or pigments as, in vinyl chloride polymers)				
IT	78-04-6 17913-97-2 RL: USES (Uses) (stabilization by, of chloroethylene polymers)				
IT	9002-86-2, properties RL: PRP (Properties) (transplant, by stabilization with <b>lubricants</b> , tin compds.				

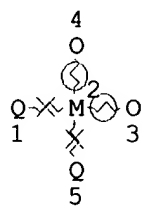


and uv light absorbers)  
 IT 17913-97-2  
 RL: USES (Uses)  
 (stabilization by, of chloroethylene polymers)  
 RN 17913-97-2 HCAPLUS  
 CN 1,3,2-Dioxastannepin-4,7-dione, 2,2-dibutoxy- (8CI, 9CI) (CA INDEX NAME)



=> d que

L3 STR



*Zn = M*

# NODE ATTRIBUTES:

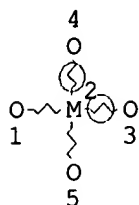
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 NSPEC IS R AT 3  
 NSPEC IS R AT 4  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

# GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 5

# STEREO ATTRIBUTES: NONE

L5 SCR 1926 AND 1956  
 L6 SCR 1964 AND 1991  
 L7 SCR 1975  
 L8 SCR 1921 AND 1966  
 L9 SCR 1935 AND 1983  
 L10 SCR 1925 AND 1935  
 L11 SCR 1920 AND 1964  
 L13 SCR 1845  
 L15 68721 SEA FILE=REGISTRY SSS FUL L3 AND ((L5 OR L6 OR L7 OR L8 OR L9 OR L10 OR L11)) NOT L13  
 L18 STR



NODE ATTRIBUTES:

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DEFAULT ECLEVEL IS LIMITED

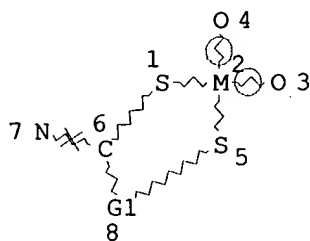
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GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L21 STR



REP G1=(0-1) C

NODE ATTRIBUTES:

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NSPEC      IS R      AT      3
NSPEC      IS R      AT      4
NSPEC      IS RC     AT      7
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

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GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

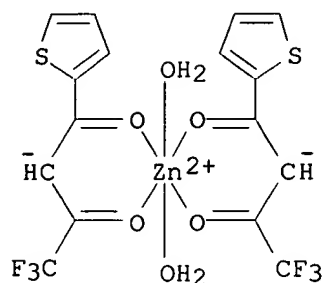
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L24      10240 SEA FILE=REGISTRY SUB=L15 SSS FUL (L21 OR L18)
L25      6446 SEA FILE=HCAPLUS ABB=ON L24
L26      13 SEA FILE=HCAPLUS ABB=ON L25 AND LUBRICANT?
L28      15 SEA FILE=HCAPLUS ABB=ON L25 AND LUBRICAT?
L29      22 SEA FILE=HCAPLUS ABB=ON L26 OR L28
L30      915 SEA FILE=REGISTRY ABB=ON L24 AND 1-5/ZN
L31      67 SEA FILE=REGISTRY ABB=ON L30 AND 2/S
L32      68 SEA FILE=HCAPLUS ABB=ON L31
L33      4 SEA FILE=HCAPLUS ABB=ON L32 AND BRIDG? (3A) COMPLEX?
L35      1 SEA FILE=HCAPLUS ABB=ON L32 (L) CHELAT?
L36      5 SEA FILE=HCAPLUS ABB=ON L33 OR L35
L37      4 SEA FILE=HCAPLUS ABB=ON (L29 OR L36) NOT L29

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=> d 137 all 1-4 hitstr

L37 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1994:639344 HCAPLUS  
 DN 121:239344  
 TI Critical evaluation of the extraction constants for 2-thenoyltrifluoroacetate chelates on the basis of the HSAB principle  
 AU Kawamoto, Hiroshi; Itabashi, Hideyuki; Mitsuyama, Akihiro  
 CS Fac. Eng., Gunma Univ., Kiryu, 376, Japan  
 SO Analytical Sciences (1994), 10(4), 675-7  
 CODEN: ANSCEN; ISSN: 0910-6340  
 DT Journal  
 LA English  
 CC 68-2 (Phase Equilibria, Chemical Equilibria, and Solutions)  
 AB TTA (2-thenoyltrifluoroacetate) extn. consts. can be explained quant. by the hard and soft acids and bases (HSAB) principle, by taking the hydration of coordinatively unsatd. complexes into consideration.  
 ST thenoyltrifluoroacetate chelate extn hydration HSAB  
 IT Extraction  
 (hydration of complexes; crit. evaluation of extn. consts. for thenoyltrifluoroacetate chelates on basis of HSAB principle)  
 IT Metals, processes  
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)  
 (hydration of complexes; crit. evaluation of extn. consts. for thenoyltrifluoroacetate chelates on basis of HSAB principle)  
 IT Hydration, chemical  
 (of thenoyltrifluoroacetate chelates; crit. evaluation of extn. consts. for thenoyltrifluoroacetate chelates on basis of HSAB principle)  
 IT 326-91-0, 2-Thenoyltrifluoroacetate  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)  
 (extn. by; crit. evaluation of extn. consts. for thenoyltrifluoroacetate chelates on basis of HSAB principle)  
 IT 13928-21-7P 15740-80-4P 30383-81-4P 158593-96-5P  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (hydration of; crit. evaluation of extn. consts. for thenoyltrifluoroacetate **chelates** on basis of HSAB principle)  
 IT 13928-21-7P  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (hydration of; crit. evaluation of extn. consts. for thenoyltrifluoroacetate **chelates** on basis of HSAB principle)  
 RN 13928-21-7 HCAPLUS  
 CN Zinc, diaquabis[4,4,4-trifluoro-1-(2-thienyl)-1,3-butanedionate-O,O']-(9CI) (CA INDEX NAME)



L37 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2002 ACS

AN 1990:451457 HCAPLUS

DN 113:51457

TI Synthesis and structure of dimeric metal complexes with N(3)/N(9)-chelating hypoxanthine ligands and with bridging water molecules:  $[M_2(\mu\text{-hyxan})_2(\text{SO}_4)_2(\mu\text{-H}_2\text{O})_2(\text{H}_2\text{O})_2]$  (M = copper, cadmium, zinc; hyxan = hypoxanthine)

AU Dubler, Erich; Haenggi, Gaby; Schmalle, Helmut

CS Inst. Inorg. Chem., Univ. Zurich, Zurich, 8057, Switz.

SO Inorg. Chem. (1990), 29(13), 2518-23

CODEN: INOCAJ; ISSN: 0020-1669

DT Journal

LA English

CC 78-7 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 75

AB Three new dimeric metal  $M(\text{hyxan})(\text{SO}_4) \cdot 2\text{H}_2\text{O}$  dimers (M = Cu, Zn, Cd, hyxan = hypoxanthine) were prepd. from acidic aq. solns. They all crystallize in the triclinic space group  $P\bar{1}$  with  $Z = 2$ . Single-crystal and powder x-ray data indicate that the Zn complex is virtually isostructural with its Cd and Cu analogs. The complexes exhibit a new dimeric structure type with mol. centrosym. units,  $[M_2(\mu\text{-hyxan})_2(\text{SO}_4)_2(\mu\text{-H}_2\text{O})_2(\text{H}_2\text{O})_2]$ . The 2 metal atoms are bridged by 2 N(3)/N(9)-chelating hypoxanthine ligands and by 2  $\text{H}_2\text{O}$  mols. The metal-metal distances are 3.151(1) Å. (Cu) and 3.452(1) Å. (Cd). Distorted octahedral coordination of the metal atoms by 2 N and by 4 O atoms is obsd. with a pronounced (4 + 1 + 1) elongation of the octahedron in the Cu complex. The bridging  $\text{H}_2\text{O}$  mols. are stabilized by very strong H bonds of the type O-H...O with a min. O...O distance of 2.57 Å. In the neutral hypoxanthine ligand, H atoms are attached at N(1) and N(7), which are involved in H bonds of the type N-H...O(sulfate). The purine rings are stacked, rotated 180.degree. with respect to each other, with stacking distances of 3.34 and 3.30 Å., resp. A review of x-ray structure detns. of metal-hypoxanthine complexes as well as of polynuclear Cu and Cd complexes with bridging  $\text{H}_2\text{O}$  mols. is given.

ST crystal structure transition metal hypoxanthine complex; copper hypoxanthine complex; cadmium hypoxanthine complex; zinc hypoxanthine complex

IT Crystal structure

Molecular structure

(of transition metal hypoxanthine sulfato dimeric complexes)

IT Transition metals, compounds

RL: SPN (Synthetic preparation); PREP (Preparation)

(hypoxanthine complexes, prepn. and crystal structure of dimeric)

IT 127818-93-3P 127818-94-4P 127818-95-5P

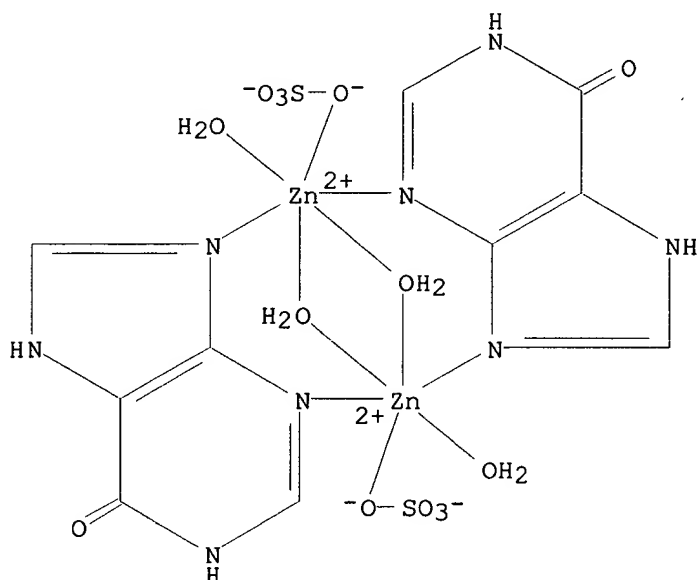
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(prepn. and crystal structure of)

IT 127818-94-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(prepn. and crystal structure of)

RN 127818-94-4 HCAPLUS

CN Zinc, di-.mu.-aquadiaquabis[.mu.-(1,7-dihydro-6H-purin-6-one-  
N3:N9)]bis[sulfato(2-)-O]di-, stereoisomer (9CI) (CA INDEX NAME)

L37 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2002 ACS

AN 1984:431435 HCAPLUS

DN 101:31435

TI Metal-(phenylthio)acetic acid interactions. Part 1. The crystal  
structures of (phenylthio)acetic acid, diaquabis[(phenylthio)acetato]zinc(  
II), and catena{aquabis[(phenylthio)acetato]cadmium(II)}AU Mak, Thomas C. W.; Yip, Wai Hing; Smith, Graham; O'Reilly, Eric J.;  
Kennard, Colin H. L.

CS Dep. Chem., Chin. Univ. Hong Kong, Shatin, Hong Kong.

SO Inorg. Chim. Acta (1984), 84(1), 57-64

CODEN: ICHAA3; ISSN: 0020-1693

DT Journal

LA English

CC 75-8 (Crystallography and Liquid Crystals)

Section cross-reference(s): 78

AB The title acid, PTAH, is monoclinic, space group P21/n, with a 7.666(1), b 5.638(1), c 18.939(2) .ANG., and .beta. 99.33(1).degree.; Z = 4. The mols. are planar and exist as centrosym. H-bonded cyclic dimers. The thioacetic side chain has synplanar-synplanar conformation. The Zn complex is monoclinic, space group C2/c, with a 32.048(11), b 5.314(2), c 10.725(3) .ANG., and .beta. 101.20(2).degree.; Z = 4. The compd. is monomeric with a distorted octahedral MO6 coordination involving 4 O atoms from 2 sym. bidentate PTA carboxyl groups [Zn-O, 2.176(4), 2.204(3) .ANG.] and 2 from cis-related H2O mols. [Zn-O, 2.002(4)]. The Cd compd. is orthorhombic, space group Pca21, with a 33.826(8), b 5.119(1), and c 9.872(3) .ANG.; Z = 4. The compd. has an octahedral MO5S coordination sphere consisting of 1 H2O [Cd-O, 2.294(10) .ANG.], an O and a S from 1 PTA ligand [Cd-O, 2.335(10), Cd-S, 2.738(5) .ANG.] and an O from the 2nd

PTA ligand [Cd-O, 2.276(10) .ANG.]. The 2nd carboxyl O from each PTA ligand completes the 5th and 6th coordination sites [Cd-O, 2.263(12), 2.254(10) .ANG.] and **bridges** adjacent **complex** centers giving a polymeric structure. At. coordinates are given.

ST mol structure cadmium zinc phenylthioacetato aqua; phenylthioacetic acid structure

IT Crystal structure

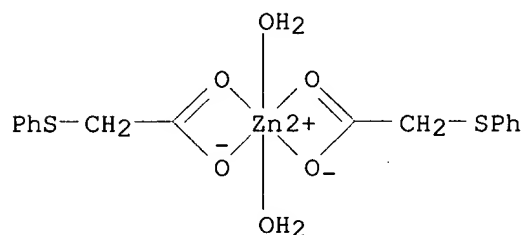
IT Molecular structure  
(of (phenylthio)acetic acid and its cadmium and zinc complexes)

IT 103-04-8 **90186-84-8** 90850-21-8  
RL: PRP (Properties)  
(structure of)

IT **90186-84-8**  
RL: PRP (Properties)  
(structure of)

RN 90186-84-8 HCAPLUS

CN Zinc, diaquabis[(phenylthio)acetato-O,O']-, (OC-6-21)- (9CI) (CA INDEX NAME)



L37 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2002 ACS

AN 1972:547116 HCAPLUS

DN 77:147116

TI p-Dioxane, p-thioxane, and 1,2-dimethoxyethane complexes with transition metal perchlorates

AU Karayannis, N. M.; Mikulski, C. M.; Specca, A. N.; Cronin, J. T.; Pytlewski, L. L.

CS Dep. Chem., Drexel Univ., Philadelphia, Pa., USA

SO Inorg. Chem. (1972), 11(10), 2330-5  
CODEN: INOCAJ

DT Journal

LA English

CC 78-7 (Inorganic Chemicals and Reactions)

AB Synthetic and characterization studies of 3d metal perchlorate complexes with p-dioxane (DX), p-thioxane (TX), and 1,2-dimethoxyethane (DME) are reported. CuL4(ClO4)2 (L = DX, TX) exhibit subnormal magnetic moments and were assigned structures involving binuclear, monodentate ligand-**bridged complex** cations, i.e., [(DX)3Cu(DX)2Cu(DX)3](ClO4)4 and [(TX)3(O3ClO)Cu(TX)2Cu(OC1O3)(TX)3](ClO4)2. The latter **complex** contains S-bonded **bridging** and both S- and O-bonded terminal TX ligands. [Cu(DME)2](ClO4)2 is monomeric, with chelating bidentate DME ligands and a planar CuO4 moiety in the complex cation. A red Zn(II) complex with TX was assigned a structure involving a polynuclear S-**bridged complex** cation ([Zn(TX)2(OH2)2]n(ClO)2n). TX acts exclusively as a S ligand in this complex. A yellow isomer of this compd. contains TX bonded through both O and S and is monomeric with chelating TX groups in the boat conformation (Zn-(TX)2(OH2)2)2+. The rest of the complex cations involve monodentate DX or TX and chelating bidentate DME ligands. TX

coordinates through S in these complexes. These compds. were formulated as follows:  $[M(DX)_2(OH_2)_4](ClO_4)_2$  ( $M = Mn, Co, Ni, Zn$ );  $[M(TX)_2(OH_2)_4](ClO_4)_2$  ( $M = Mn, Fe$ );  $[M(DME)_2(OH_2)_2](ClO_4)_2$  ( $M = Mn, Co, Ni, Zn$ ) (these complexes involve distorted octahedral complex cations); and  $[Fe(DX)_4]_n(ClO_4)_{2n}$  and  $[Fe(DME)_2]_n(ClO_4)_{2n}$ , contg. either 4-coordinated, monomeric or 5-coordinated, binuclear complex cations. Co(II) and Ni(II) salts react with TX, and dark-colored solids contg. decompn. products of this ligand are pptd.

ST dioxane transition metal complex; thioxane transition metal complex; methoxyethane transition metal complex; copper dioxane thioxane complex; manganese dioxane thioxane methoxyethane; iron dioxane thioxane methoxyethane

IT 37299-42-6P 37330-73-7P 37330-74-8P 37330-86-2P 38549-26-7P  
**38549-27-8P** 38549-28-9P 38549-29-0P 38549-30-3P  
 38549-31-4P 38549-32-5P 38549-33-6P 38549-34-7P 38549-35-8P  
 38651-38-6P 38651-39-7P 38686-51-0P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of)

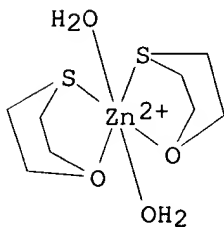
IT **38549-27-8P**  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (prepn. of)

RN 38549-27-8 HCAPLUS

CN Zinc(2+), diaquabis(1,4-oxathiane-01,S4)-, diperchlorate (9CI) (CA INDEX NAME)

CM 1

CRN 46358-02-5  
 CMF C8 H20 O4 S2 Zn  
 CCI CCS



CM 2

CRN 14797-73-0  
 CMF Cl O4

